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ART 31

Module 6

Rationalist-Formalist Currents

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Art 31

Module 6

RATIONALIST – FORMALIST CURRENTS

Distance Learning

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Cover Photo
Joseph Stella, 1880-1946, U.S.A.
Battle of Lights, Coney Island, 1914.
Oil on canvas, 76" x 84 1/4".
Yale University Art Gallery, New Haven.
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Student Module
Module 6
Rationalist-Formalist Currents
Alberta Distance Learning Centre
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CONTENTS

ART 31
MODULE 6

Overview 1

Section 1: The Power of Colour

Activity 1: The Interaction of Colour 7
Activity 2: Josef Elbers, *Homage to the Square* 11
Activity 3: Colour Field Painting 15
Activity 4: Helen Frankenthaler and Free Colour Construction 17
Activity 5: Mark Rothko and Colour as Presence .. 21
Activity 6: Moholy-Nagy: Painting with Light 25
Follow-Up Activities 31
  Extra Help: Colour and Ideas 31
  Enrichment: Colour as an Expressive Medium: Three Canadian Artists 32
Conclusion 34

Section 2: Colour, Light, and Motion in Contemporary Art

Activity 1: Illusions of Motion 37
Activity 2: Kinetic Art 44
Activity 3: Plastic as a Sculptural Material 54
Activity 4: Light Art: Neon 56
Activity 5: Environmental Art 59
Follow-Up Activities 63
  Extra Help: Review 63
  Enrichment: Creating a Mobile 64
Conclusion 64

CONTENTS

Section 3: Technology: Computer Graphics and Electronic Media

Activity 1: Exploring Computer Design 67
Activity 2: Creating Textures and Using Colour 71
Activity 3: Computer Styles 75
Activity 4: An Interview with a Graphic Artist 78
Activity 5: Animation 80
Follow-Up Activity: Kaleidoscope Designs 81
Conclusion 82
Module Summary 82

Section 4: Technology: Computer Graphics and Electronic Media

Activity 1: Exploring Computer Design 86
Activity 2: Creating Textures 87
Activity 3: Computer Styles 89
Activity 4: Illustrating Text 92
Activity 5: Designing With Computer Graphics 93
Activity 6: Animation 94
Follow-Up Activities 94
  Extra Help: Kaleidoscope Designs 94
  Enrichment: Design Project 95
Conclusion 95
Module Summary 95

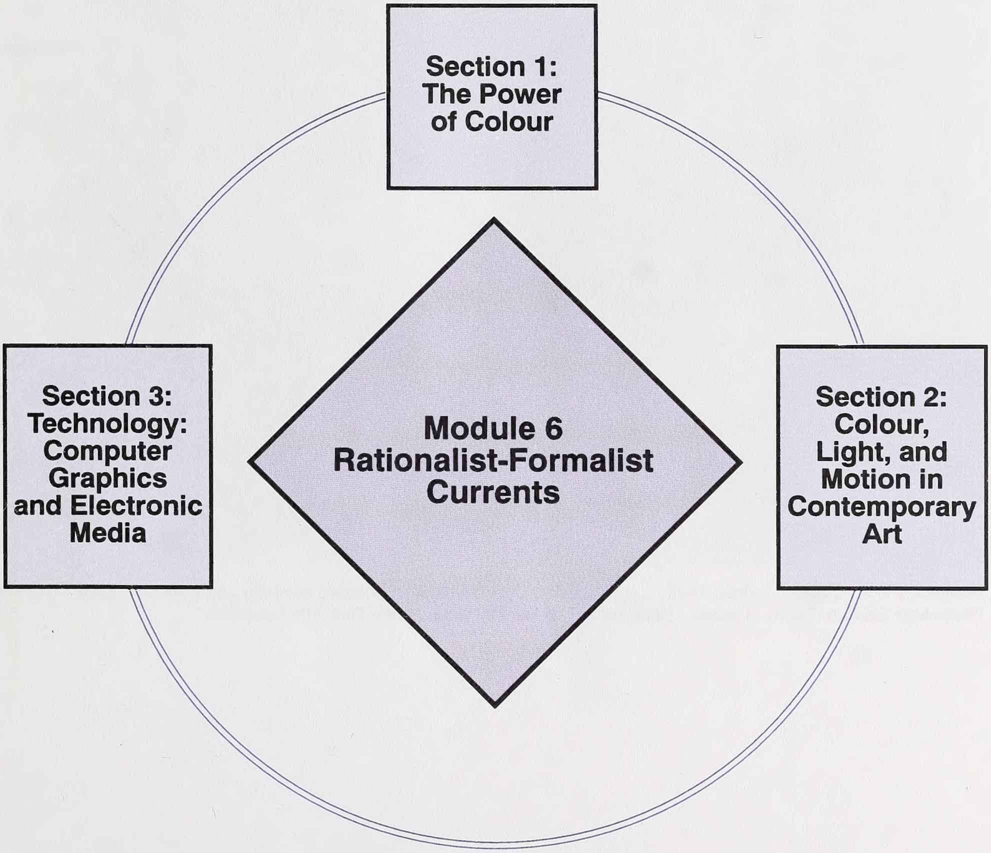
Appendix

Glossary 99
Answers to Questions 101

OVERVIEW

Art has power. Art has impact. Images can affect our thoughts and emotions; they influence actions, choices, and desires. Artists draw inspiration for image making not only from their knowledge of art, but also from their investigations into science and technology. These studies inspire artists to explore new possibilities for image making.

In this module you will learn about the expressive power of colour; you will discover some new ways of using light and motion studies to make art; and you will explore some computer-graphic programs.


Section 1: The Power of Colour
Section 3: Technology: Computer Graphics and Electronic Media
Module 6 Rationalist-Formalist Currents
Section 2: Colour, Light, and Motion in Contemporary Art

Module 6 is made of 3 interrelated parts.

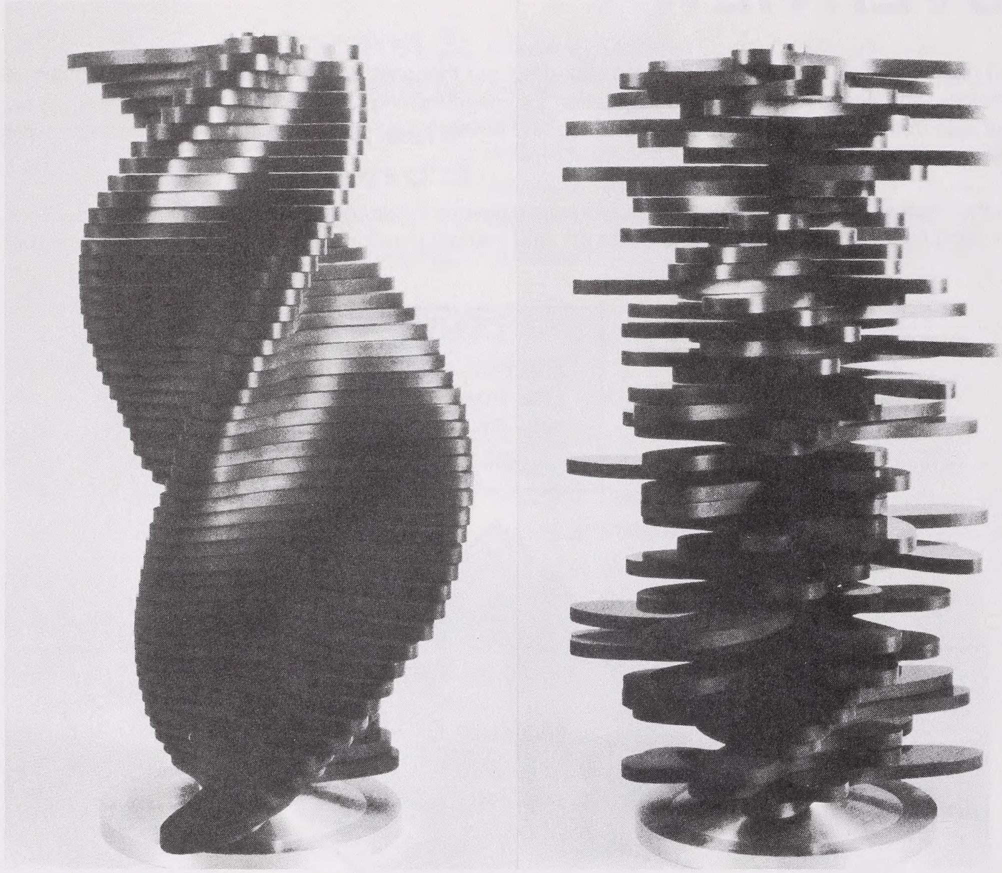
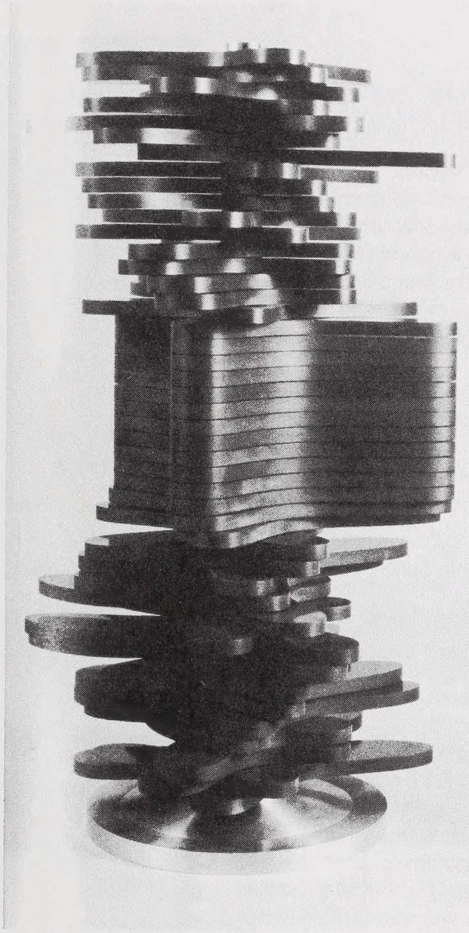
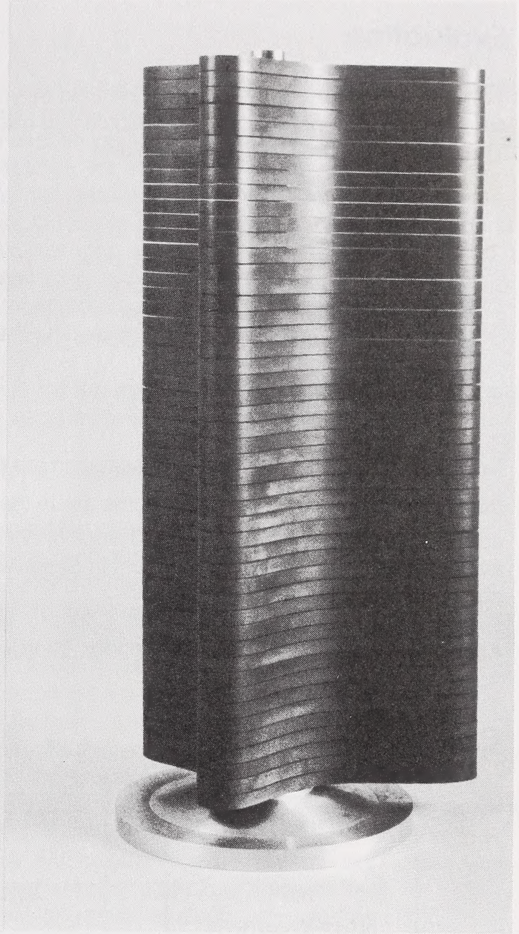


Illustration 175. Ulysse Comtois, 1931-____, Canada. *Colonne* (1968). Phenolic laminate and aluminum plate, 70 cm high. Photo Mira Godard Gallery, Toronto. Courtesy of The Bank of Nova Scotia Fine Arts Collection.





Evaluation

Your mark in this module will be determined by your work in the Assignment Booklet. You must complete all assignments. In this module you are expected to complete three section assignments. The assignment breakdown is as follows:

Section 1	35%
Section 2	35%
Section 3	
or	
Section 4	30%
Total	100%

Note: Some images for study are located in the module booklets; some you will have to locate in magazines or in your community; some are in the *Booklet of Reproductions.* When the ☰ symbol appears, you may choose to use the *Booklet of Reproductions* or the laserdisc, *Sightlines* (if available). Bar codes for the numbers in *Sightlines* have been included for use with laserdisc players equipped with a bar code reader.

Answers to activities are in the Appendix. Words marked* are defined in the Glossary in the Appendix.

Course Overview

Module 1
The Influences of Non-Western Cultures

Module 2
The Inner Self

Module 3
Cities and Landscapes

Module 4
Subjective and Expressive Currents

Module 5
Science and Technology – Function and Meaning

Module 6
Rationalist-Formalist Currents

Module 7
The Artistic Community and Canadian Style

SECTION 1

THE POWER OF COLOUR

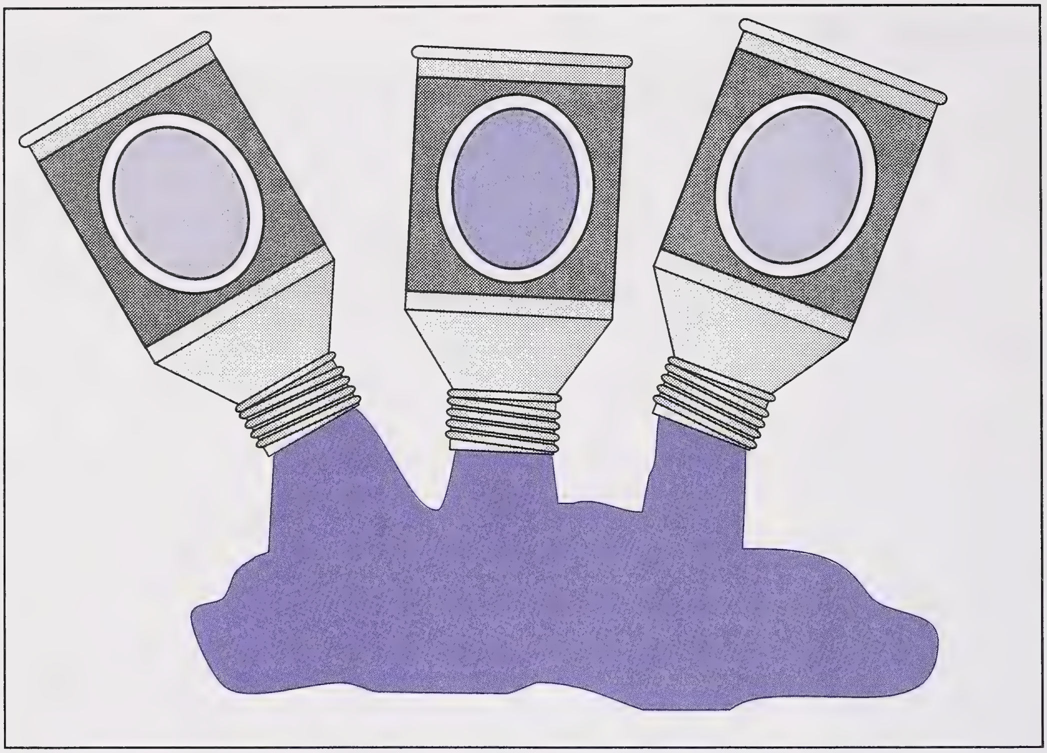
Have you a favourite colour? Is there a colour you do not like? Can you think of the reasons why you like a colour? Can you think of the reasons why you dislike a colour? Often you choose your likes and dislikes by association. You remember a wonderful vacation by the sea, and so you may like blues and blue-greens because of that memory. You may have had a hand-me-down purple sweater when you wanted a new yellow one, and so you have come to dislike purple because of that memory. While reactions to individual colours are personal, colours themselves do have the power to trigger emotional reactions in everyone, and thoughtful reactions in those who use colour: designers, artists, scientists, psychologists.

In this section you will learn about the ways that some twentieth-century artists interpreted and used colour as a powerful force in painting.

After completing this section you should be able to

- discuss some ideas about the power of colour
- recognize the importance of colour interaction
- understand the ideas behind colour field painting
- appreciate the attempts to "paint" with light

Colour is light and pigment. Colour is information. Colour is a sensation. For centuries, colour was considered to be a property of things, useful to help us identify forms and shapes; practical to help us organize decoration and environment in pleasing ways. To think of colour as a thing-in-itself, separate from the objects it might describe, is a very recent practice in art. You have been learning that much of the art of the twentieth century moves ever closer to the self-sufficient picture. That is, artists study and analyse the ways that shapes, lines, textures, forms, and colours can be organized in powerful ways without reference to any objective reality apart from the work itself. Appreciating non-objective painting required a somewhat sophisticated understanding of the interaction of shape, space, form, and colour. Artists like Chagall in *I and My Village* detached colour from the object, painting the man's face green; and Fauves, like Matisse, used colour to raise the emotional temperature of the work. Recall the painting of Madame Matisse with the green stripe down the centre of the face.



Colour has almost always had emotional reference. Chagall and Matisse were returning to some ancient sources of that emotional power. Masks, make-up, (particularly in stylized ritual* or theatre), folk art, primitive art, hieratic* art, all use colour emotionally.

You have looked at works by Georgia O'Keeffe, Otto Rogers, Georges Rouault, van Gogh – works in different styles where colour is used symbolically and expressively. Colour has always been a significant element in art. In this section you will have the opportunity to learn something about the expressive powers of colour, not as an attribute of things, but as a subject for a work of art.

Discuss some ideas about the power of colour. Recognize the importance of colour interaction.

In *Art 11*, Module 5, Section 2, you learned something about the theoretical organizations of colour. Review this section. Although artists learn these colour theories early in their art school studies, theories alone will not give any artist power over colour. While there are no "rules" of colour that will make you more sensitive to the power of colour, there are some exercises in seeing colour interactions that will help you become aware of colour effects, and so help you enjoy and understand more about art.

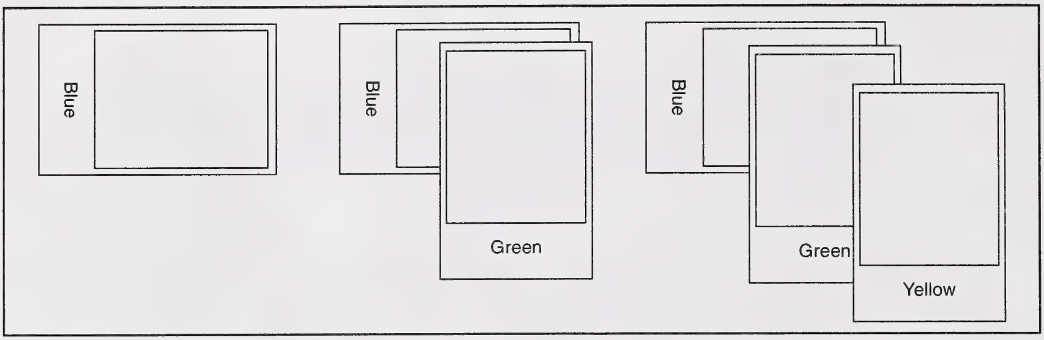
Practice in using colour and studying colour interactions in works of art gives an artist more significant insights into the ways that colours act with one another and on the viewer.

For this activity, you will need samples of coloured papers. Make a small collection of colour swatches. Cut colours from magazines, or from gift-wrap papers, or from construction paper, or get some paint samples from a paint/hardware store. Put your sample pieces in envelopes marked **red**, **blue**, **yellow**, **green**, **orange**, **purple**. One of the first things that you might notice when you begin to make your collection is that there is not a single example of each hue. "Red," for example, can be a red like fire, or sunset, or a Coca-Cola can. You will have in each envelope a wide variety of samples of each colour.

The identification of single colours has little to do with developing a sensitive reaction to the use of colours in a painting. It is not seeing the single colour that is significant, but seeing instead what happens between colours when they are shown in a single painting. You will explore some interactions of colour.

In this activity you will also experiment with the effects of creating the illusion of transparency in colour.

1. You know that blue and yellow mixed will produce green; blue and red will produce purple; red and yellow will produce orange. Select one of these pairs for your experiment. Suppose you choose blue and yellow. Take from your colour samples one blue and one yellow. Place the two samples side by side and try to imagine the green that would result from mixing your blue sample and your yellow sample. Select from your green samples, the green that will match most closely the green you imagine. Now arrange your samples as in the following diagram.



[1]

Try at least five of these combinations using the same pair, but selecting different blues, yellows, and greens each time. Arrange all your experiments in a single "exhibit."

2. Now try this: mix a green using blue and yellow paint. Paint a strip of paper uniformly with the green you have mixed. When the paint is dry, cut the paper into 1" squares.

Now paint a 3" square yellow a 3" square black, a 3" square blue, and two 3" squares any colours you choose. Place the green 1" squares on the larger coloured squares.

a. Which combinations seem most exciting?

____

____

b. Study your samples intensely for a few moments. What illusions are created? Do the "greens" change in any way?

____

____

c. What conclusion about colour interaction can you draw from this experiment?

____

____

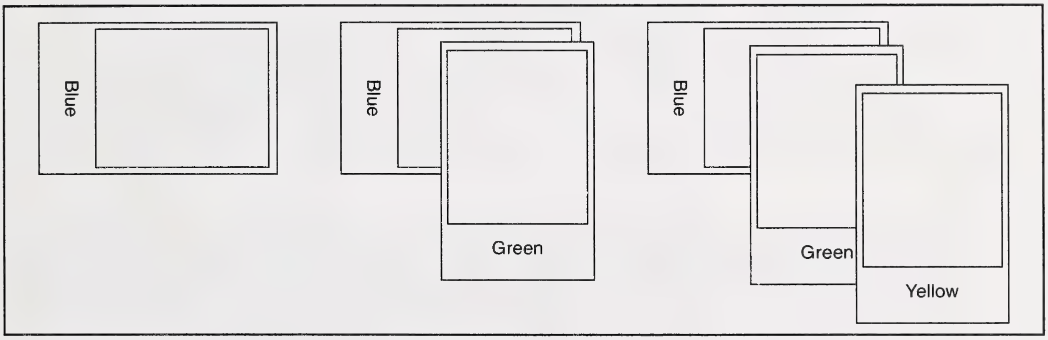
---

[1] Adapted from Josef Albers, *Interaction of Colour*. Yale University Press, 1963.

Transparency and Space Illusions: You can create the illusion of transparency by the careful arrangement of colour changes. The mixed colours – greens, purples, oranges – are themselves changed by interaction with their "parent" colours. For example, a green can be closer to blue than to yellow, or closer to yellow than to blue.

3. Look at your samples from question 1. Find one middle colour that seems to you exactly balanced between the two primary colours. Now look at the diagram that follows. Find examples from your experiment that show distance, nearness, and equidistance between the two primary colours.

   a. Arrange your samples to show a green that seems equidistant between blue and yellow; a green that seems nearer the yellow; a green that seems nearer the blue.



   b. Now collect and arrange in one experiment one blue, one yellow, and several greens. Study the result and decide which colours seem "near," which "far," which appear to move? Draw a rectangle and arrange your blue, yellow, and greens so that all the space is filled.

c. What conclusion can you draw about the arrangement and interaction of colours and spatial illusions?

Colour Harmony: *Harmony* means sounding well together. Originally applied to music, the word has come to mean a pleasing internal arrangement of related parts. In *Art 11* you learned the colour wheel, a common way of organizing colours to learn something about the physical relationships between and among them. The colour wheel will not, however, give you many insights into the experience of colour harmony in paintings. In paintings, colours are connected and interact in space and so have many-sided relationships. When you look at colours in a painting, you consider all the different shades and tints, the patterns and the placement, the size and the shape of the individual colours, and the illusions of space, movement, and transparency that the colour interactions create. Changing light under which you view colours in paintings also creates changing interactions and illusions.

4. Use your colour samples to arrange any three sets of colour combinations. You might use green, red, blue combinations; you might try purple, orange, yellow. Make a free selection. For each set, arrange the colours so that you have one colour in a larger shape and greater quantity than the other two. Keep experimenting – remember there are no exact rules for colour harmony. Try to create harmony, not only through related colours in balance, but also through colour tension as well. Tension means a careful balancing of opposites, of contrasts.

5. Review your experiments and select the one that you sense best achieves satisfying colour interactions. Write a brief analysis of the colour effects that you have created in this experiment. Refer to transparency, movement, and tension as well as any other colour effects that you notice.

Check your answers by turning to the Appendix, Section 1: Activity 1.

Activity 2: Josef Albers, *Homage to the Square*

Recognize the importance of colour interaction.

Josef Albers, teacher and artist, made a significant contribution to the understanding of the interactions of colour. He wrote about his theories in a book, *Interactions of Colour,* and demonstrated these theories in his paintings. His work showed that

- by changing the size of a colour, any of the neighbouring colours, or background colours in a painting you change the hue, the value, and the intensity of the colour
- changing size, placement, and combinations of colours changes the way you will see and interpret the colour
- colours are relative

Through his analysis of the distinction between the physical properties of colour and the emotional response to colour, and through his distinctive paintings, he helped the movement toward detaching colour from objects and using colour interactions themselves as subjects for painting.

You Choose

If you have access to the laserdisc *Sightlines*, find and view frame 8969.

OR

Turn to picture 168, Josef Albers, *Homage to the Square: Broad Call*, in your *Art 31 Booklet of Reproductions.*

You Choose

If you have access to the laserdisc *Sightlines*, find and view frame 10971.

OR

Turn to picture 169, Josef Albers, *Homage to the Square: Ascending*, in your *Art 31 Booklet of Reproductions.*

Also turn to picture 170, Josef Albers, *Homage to the Square: Curious*, in your *Art 31 Booklet of Reproductions.*

1. Each of these paintings shares the title: *Homage to the Square*. How do you interpret this shared title?

____

____

____

2. Each of these paintings makes a statement about colour interactions. Examine each combination of colours within each square and respond as follows:

    a. What colour combination is used in each painting?

    Homage to the Square: Broad Call ______________________

    Homage to the Square: Ascending ______________________

    Homage to the Square: Curious ______________________

    b. What are the relative sizes of the individual colour squares within each painting?

    Homage to the Square: Broad Call

    ____

    ____

    ____

    Homage to the Square: Ascending

    ____

    ____

    ____

    Homage to the Square: Curious

    ____

    ____

    ____

Albers' *Homage to the Square* was a series of hundreds of paintings of squares within squares. He experimented with colour interactions and colour sensations. Although the colours are painted "flat," if you look carefully you will begin to feel a sensation of depth. The colours, for Albers, were like mysteries floating on the canvas.

3. In each of the following paintings, which colours seem to recede? Which colours seem to advance?

   Homage to the Square: Broad Call

   Homage to the Square: Ascending

   Homage to the Square: Curious

Josef Albers believed that colour is the most relative element in art and that there is no such thing as a colour that is unpleasant in itself. His aim was to show that colours display changing properties when they are combined and interact with one another. Albers believed that any combination of colours is possible.

4. How do these three paintings illustrate the artist's convictions?

   Homage to the Square: Broad Call

   Homage to the Square: Ascending

Homage to the Square: Curious

5. The changes in the titles are: *Broad Call, Ascending, Curious*. Using the effects created by the different colour interactions in each painting, and remembering Albers' interest in colour sensation, interpret each title change.

   Homage to the Square: Broad Call

   Homage to the Square: Ascending

   Homage to the Square: Curious

Check your answers by turning to the Appendix, Section 1: Activity 2.

Activity 3: Colour Field Painting

Understand the idea behind colour field painting.

Colour field painting removes everything from the work except the action of colour. Colour field painters began to think of the surface of the painting not as a composition – an arrangement of shapes on a surface – but rather as a field, a space to be energized by the interactions among colours themselves. In such paintings emotional expression, symbol-making, social comment, and self-revelation have disappeared. In appearance, colour field paintings are large, very simplified, and almost flat in colour.

Look at the following works by Barnett Newman.

You Choose

If you have access to the laserdisc *Sightlines*, find and view frames 11821, 12773, 9496, 9495, and 12774.

OR

Turn to pictures 171, 172, 173, 174, and 175, Barnett Newman, *Broken Obelisk; Here II; Concord; Horizon Light*, and *The Way I*; in your *Art 31 Booklet of Reproductions.*

1. What are the common characteristics among all these works?

2. How would you describe Newman's style?

3. What colour interactions has Newman created?

4. If colour field painting is about colour only, how do you interpret the titles that Newman gave his works?

When Newman had his major show in 1959, critics did not have a unanimous favourable response. One wrote: "I don't find this work either fraudulent or offensive, but I do find it a bore." Another wrote: "Newman is an exemplary painter: exemplary in the mastery and economy of his means and in the purity of his purpose."

5. Consider your own response to these paintings and justify one or the other of the critical opinions quoted. Be sure to refer to specific works to develop your answer.

Check your answers by turning to the Appendix, Section 1: Activity 3.

Activity 4: Helen Frankenthaler and Free Colour Construction

Recognize the importance of colour interaction.

Another artist who had a major influence on the changing ideas about painting was Helen Frankenthaler. This artist was one of the first to turn away from the tightly designed and composed pictures that Cubism encouraged. Frankenthaler's method was to pour thinned pigments from old coffee cans onto unsized cotton canvas. "Size," as you probably know, is a glue-like finish that seals the canvas so that the paint does not seep in. If the canvas is unsized, what happens? This method of creating loosely formed abstract shapes, and staining the canvas with poured colours created unusual colour changes and effects. At first, the artist used light charcoal guidelines to guide her colour spills, but eventually she abandoned these guidelines and relied on the colour shape as her strength. Since her diluted colours seeped into the canvas, they created a light and airy optical effect.

Look at some of Helen Frankenthaler's paintings and then answer the questions that follow.

You Choose

If your have access to the laserdisc *Sightlines*, find and view frames 11164, 11165, 8818, 9212, 10821, 9214, and 9213.

OR

Turn to pictures 176, 177, 178, 179, 180, 181, and 182, Helen Frankenthaler, *Blue Territory; Jacob's Ladder; Brown Moons; Canal; Savage Breeze*; *Flood;* and *Yellow Clearing*, in your *Art 31 Booklet of Reproductions*.

1. Study this group of paintings carefully. How would you describe Helen Frankenthaler's style? Recall the artists you have studied in *Art 21* and in *Art 31*. Does Frankenthaler's work remind you of any other works you have studied? In what way?

2. Almost all of Frankenthaler's titles have a similar reference. To what do most of the titles refer? What do you observe in the works that might relate to these titles?

3. What connections between Josef Albers' colour theories and Frankenthaler's stained canvasses can you make? Refer to specific works and details in your answer.

4. Robert Hughes in *Shock of The New*, refers to Helen Frankenthaler's works as "decorative, anxiety-free, and socially indifferent." What details in the works support this judgement? Use a work from Module 4, Section 4 as a comparison.

5. Irving Sandler wrote of Frankenthaler's work:

> The unprimed canvas whose weave was visible in the thinly painted and bare areas alike not only countered the sense of depth and of paint substance but, as the entire surface, acted as a "field" contributing a quality of openness, of expansiveness. The canvas also constituted a source of light beneath the washes of colour that made them luminous; an arena of colour events; and when left untouched, a colour in itself.[1]

   a. How can a painting on a flat canvas create a sense of "openness, of expansiveness"?

   b. What technique makes paint appear luminous?

---

[1] From *The New York School: The Painters and Sculptors of the Fifties.* Irving Sandler, New York: Harper and Row, 1978, p. 67. Reprinted by permission of Harper and Row.

c. Recall what you learned about colour and colour interactions. Select any three of Frankenthaler's works and describe the "colour events" that you notice.

Title:

Title:

Title:

Check your answers by turning to the Appendix, Section 1: Activity 4.

Activity 5: Mark Rothko and Colour as Presence

Recognize the importance of colour interaction. Discuss some ideas about the power of colour.

From 1949 until his death in 1970, Mark Rothko painted a series of very large colour rectangles. The colours are soft-edged and move vertically up the canvas. Because of this arrangement, Rothko's works have echoes of landscape feelings since the fine changes between colours often suggest an horizon line.

Look at some examples of Rothko's work:

You Choose

If you have access to the laserdisc *Sightlines*, find and view frames 11409, 12822, 11408, 11407, and 11410.

OR

Turn to pictures 183, 184, 185, 186, Mark Rothko, *Magenta, Black, Green on Orange; No. 1, White and Red; Tan and Black on Red; and Number 10.*

1. What has Mark Rothko eliminated completely from his paintings? What is left?

2. Rothko stained the canvas like watercolour paper, then built up the surface with repeated overpainting of colours. What visual and emotional effects do you think this technique would create?

3. Consider the titles of Rothko's paintings. Many are numbered, others are named by the colour combinations the artist used. What do these titles tell you about the way Mark Rothko thought of the paintings?

Rothko wanted his paintings to be a vehicle for a spiritual experience. He believed that colour has in itself an absolute power to communicate thought and emotion. No signs or symbols, no references to any objects outside the painting – only colour is needed. Although looking at a reproduction is nothing like looking at the actual paintings, you can get some idea of how Rothko's paintings might work.

4. What do you think his paintings communicate? Why or why not do you accept his belief that colour alone matters?

5. Compare Rothko's paintings with Josef Albers' *Homage* series. What similarities do you notice? What is the major difference between these works? What differences in effect do you feel?

Mark Rothko wanted his work to carry deep spiritual significance. From 1964 to 1967 he worked on a series of painted panels for a non-denominational* chapel for Rice University in Houston, Texas. The Rothko Chapel was meant to be a place of contemplation. The paintings were intended to communicate a deeply spiritual experience. The panels are painted in blacks and deep plum reds. The colours modulate softly from one to the other. There are no shapes, no forms, no images. Only silence and softly vibrating colour remain.

Turn to picture 187, Mark Rothko, The Rothko Chapel, in your *Art 31 Booklet of Reproductions* to look at the reproduction of the chapel.

6. You are a hard-working university student. You take a 20-minute break and enter this chapel for a quiet meditation. Describe your reaction to these coloured panels. Do you think you would feel peace here? Why or why not?

7. Mark Rothko's works make a statement about the human capacity to desire and to appreciate order. What do you think such a statement could be? Refer to specific works in your answer.

8. Using Mark Rothko's works as examples, write a statement about the ideas and practices that colour field painters contributed to the development of modern art.

Check your answers by turning to the Appendix, Section 1: Activity 5.

Activity 6: Moholy-Nagy: Painting with Light

Appreciate the attempts to “paint” with light.

Colour is a phenomenon of light. In 1925, Ludwig Hirschfeld-Mack wrote a paper titled: “Colored Light-Play – Nature – Goals – Criticisms.” This paper described the author’s experiments with relationships between sound and light rhythms – an investigation into the expressive power of moving light sequences. Hirschfeld-Mack constructed a translucent light screen that he set before a stencil that would mask and change the images reflected. The softly coloured transparent forms that resulted from the play of coloured lights could be vibrated, or changed in shape, or made bright or dim.

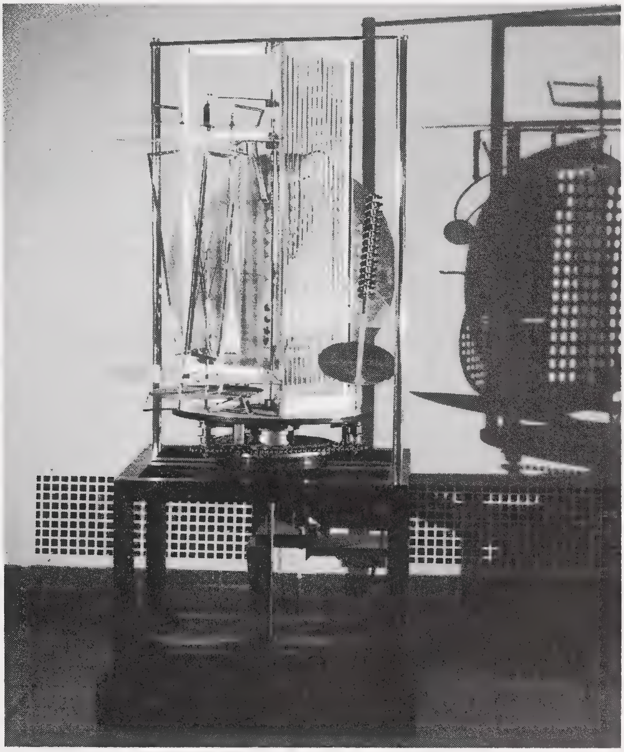


Illustration 176. Laszlo Moholy-Nagy, 1895-1946, U.S.A. *Light-Space Modulator*, 1921-30. Mobile construction of steel, plastic, and wood, 59 1/2" high. Busch-Reisinger Museum of Germanic Culture. Harvard University, Cambridge, Mass. Gift of Mrs. Sibyl Moholy-Nagy. Courtesy of the Busch-Reisinger Museum, Harvard University, Cambridge, Massachusetts.

From experiments like this **Light Art** developed. Laszlo Moholy-Nagy was one of the pioneers in **Light painting**. Indeed, he thought of the image of a city at night as a light sculpture. Experimenting in the early 1920s, he thought that the headlights of moving cars and the brightness of outdoor advertising could turn the environment into a "Light Art show." He constructed a light-modulator* to teach his students to see the forms created as beams of light produced changed colours and shadows.

Study the picture of the light modulator in Illustration 176.

1. This sculpture is a six-foot high structure of aluminum and chrome-plated pieces that are constantly moved by a motor and a chain belt. To experience the work, the room must be darkened so that the spotlights that shine on the moving parts throw shadows on the wall. What result would you expect?

    ____

    ____

    ____

    ____

Another Light artist is Thomas Wilfred, the creator of a work called *Lumia*. Wilfred constructed an instrument like an organ on which you could "play" colour intensities. The instrument could be set on automatic so that a viewer could sit before a screen and enjoy an ever-changing series of changing colour formations.

Turn to picture 188, Thomas Wilfred, *Third Movement: elliptical from Lumia Suite, Op. 158* in your *Art 31 Booklet of Reproductions.*

2. a. What purpose do such experiments have in the development of art?

    ____

    ____

    ____

    ____

    ____

   b. Why do you think that Wilfred's *Light Organ* never caught on?

    ____

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Here is a description of the *Lumia* as it is today. Read the paragraph and look at the picture of *Lumia* reproduced in picture 188, in your *Art 31 Booklet of Reproductions*.

> *Lumia* can now best be seen in a small theatre set up...in the basement of the New York Museum of Modern Art. Here the viewer sits in relative silence. A heavily curtained room contains about twenty seats with a luminous, almost transparent screen in front as an only source of light. The changing forms for this program take on the wispy quality of high-altitude clouds...It is a transcendent but unnatural presentation of color where vivid blue-purples, glowing yellow-greens, and deeply saturated reds make up a fraction of an unforgetable spectrum. These are not painterly* colors, nor are they like the stained glass of the Great Gothic cathedrals.[1]

3. What is the unique quality of the colours produced by the changing light program in *Lumia*?

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4. What are the colour limitations of this work?

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5. Light art has a severe limitation insofar as the viewer is concerned. What do you imagine that limitation to be?

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____

____

____

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[1] From *Beyond Modern Sculpture: The Effects of Science and Technology on the Sculpture of this Century*, Jack Burnham, p. 289.

6. What connection do you see between the Colour Field artists and the Light artists? Refer to specific works.

Since 1961, several artists have dedicated themselves to producing sculptures that combine moving parts, neon lights, and musical programs. Impossible to reproduce in printed material, these works can be experienced only if you visit the site where the works are installed or view a videotape or videodisc.

The Glenbow Museum in Calgary has a light sculpture in its foyer. This sculpture is called *Northern Lights*. The colours and music are activated by electronic timers. Coloured lights play over a towering structure of acrylic icicles. Should you visit the city, you may wish to see this work now that you have some idea of the experiments artists make with light.

In Edmonton, try to catch "The High Level Bridge Waterfall." (It is only turned on for brief periods during special occasions.) This waterfall is created by piping water so as to fall from the High Level Bridge. Light is played across and through it for dramatic effects. It is the creation of artist Peter Lewis.

Today, many people working with computers produce moving light art combined with music and/or sounds and/or vocals. If possible view the laserdiscs *Sightlines*, Side 2 *Dancer* and *Salmon* and *The Dream Machine*. Check with your learning facilitator for the availability of these laserdiscs.

7. Why would artists be interested in working with light? What advantages, or what new statements about art can such works make?

Check your answers by turning to the Appendix, Section 1: Activity 6.

8. Take a white cardboard, or a white cloth – a sheet, a white shirt, or a towel will do. Arrange three white objects on the white cloth – three white eggs would be fine. You will also need a strong flashlight. Locate three acetate sheets in red, blue, and yellow. Cut circles from each of the acetate sheets so the diameter will fit on the face of the flashlight. The acetate circles will act like the gels (coloured transparent sheets) that are used in stage lighting. You will also need pencil and paper to note the results of your experiment.

   a. Observe the white objects on the white cloth in the lighted room. What are the shapes of the forms? What are the shapes of the shadows? Have all the edges sharp definition? What, if any, colours, colour changes, colour interactions do you notice even though all the objects are white? Record your observations in the space provided.

   b. Turn out the lights and then light the objects with the flashlight. Record your observations. Take note of every change you see: edges, forms, shadows, over-all design, patterns of light and dark.

c. Now use the acetate circles. Cover the flashlight with the red circle. Record your observations. Now use the green, then the yellow. Now use the acetate circles in combination. Make as many variations as you can, each time recording your observations.

d. Collect all your observations and write a summary statement about the effects of coloured lights on forms and the potential of coloured light as an expressive medium.

e. Optional: if you are enthusiastic about any one of the colour effects you have created with light you may wish to make a painting of the result of that particular experiment.

Check your answers by turning to the Appendix, Section 1: Activity 6.

Follow-Up Activities

If you had difficulty understanding the concepts in the activities of this section, it is recommended that you do the Extra Help. If you have a clear understanding of the concepts it is recommended that you do the Enrichment.

Extra Help: Colour and Ideas

List ten ideas or new information that you learned in this section about colour and its uses. Beside each statement, give an example of a work that seems to you to best show that idea. Review the section and the images reproduced for you before you begin.

	IDEA/INFORMATION	WORK
1.	____________________ ____________________	____________________
2.	____________________ ____________________	____________________
3.	____________________ ____________________	____________________
4.	____________________ ____________________	____________________
5.	____________________ ____________________	____________________
6.	____________________ ____________________	____________________
7.	____________________ ____________________	____________________
8.	____________________ ____________________	____________________

9.

10.

Check your answers by turning to the Appendix, Section 1: Extra Help.

Enrichment: Colour as an Expressive Medium: Three Canadian Artists

Turn to picture 189, Guido Molinari, *Bi-sériel Orange-Vert*; picture 190, Jack Bush, *Dazzle Red*; and picture 191, Michael Snow, *Lac Clair*, in your *Art 31 Booklet of Reproductions*.

The preceding are three Canadian paintings that use only colour as the expressive medium. Each is identified by title and by artist. Use the knowledge that you gained in this section to provide an analysis of one of these works.

Check your answers by turning to the Appendix, Section 1: Enrichment.

Conclusion

In this section you learned some ideas about the power of colour that is detached from any objective image to express thought and emotion. There are no rules by which you can learn to be an effective user of colour, yet practice in exploring colour interactions within actual works will help you gain insights into colour as an expressive element. Colour is both pigment and light. Some modern artists are exploring the technology of light to make moving sculptures and images. These experiments help you understand something about the potential of colour as expression.

Assignment Booklet

Turn to your Assignment Booklet and do the assignment for this section.

SECTION 2

COLOUR, LIGHT, AND MOTION IN CONTEMPORARY ART

Picture this: Your room is a total disaster, you have left your clothes everywhere, your books and records litter the floor. Even some of the furniture is not in its place. You have decided to do something about the chaos and begin to put the room into order. Your are using rational thinking when you create order to achieve a desired effect. Generally, a building is an example of formal order: beams, windows, and walls are designed and placed for a functional reason. Similarly, machines are made of parts that are designed in a particular order. This rational, designed order, combined with energy, allows machines to work.

Machinelike precision, motion, and mechanization are interesting to many contemporary artists. Letting modern technology influence art isn't far-fetched at all. We often admire the visual beauty and motion of machinery in a new car, a speed boat, an airplane. We appreciate the polished surfaces, the intricate parts of fused metal, or the sweeping and streamlined shapes. Also, the excitement of this kind of contemporary art form lies in its immense diversity. You might not like all of these art forms, but you can understand and appreciate the creative ways artists invent and use materials inspired by modern technology.

In previous sections you have studied Expressionism and Abstract Expressionism. These works were created by artists who used their art to express strong emotions and feelings. The opposite of emotional is rational. In this section you will consider works by some contemporary artists who are part of a rational,* formal* trend in contemporary art. After completing this section you will be familiar with some artworks where the composition is carefully "reasoned" to achieve a desired effect. You will consider the rational-formal ideas in the art of our time and become familiar with artworks that focus on the imagery of machines, mechanization, motion, movement, and light.

After completing this section you should be able to

- recognize and discuss rational-formal artworks
- understand that the invention of new materials fostered non-traditional art forms
- appreciate machinelike precision, mechanization, and movement as the subject matter of some contemporary artists
- understand that technology and art merge to create Light art
- analyse contemporary sculptures as systems
- define and describe Kinetic art

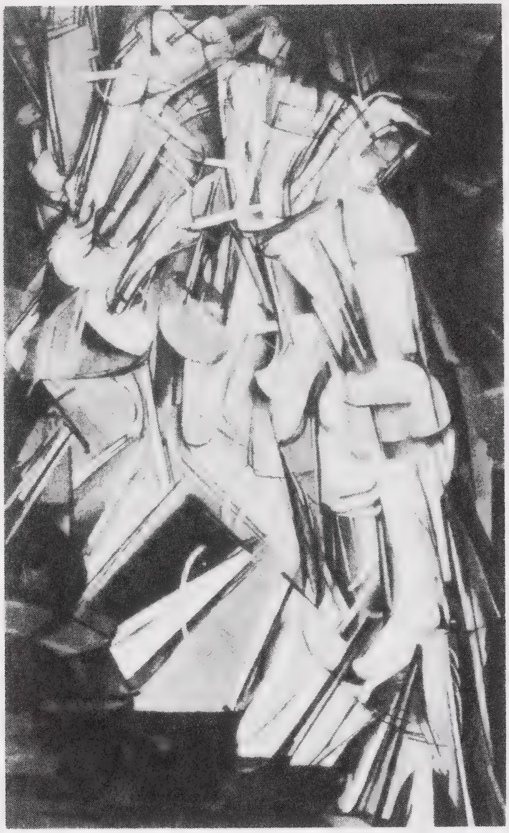


Illustration 177. Marcel Duchamp, 1887-1968, U.S.A. *Nude Descending a Staircase, No. 2*, 1912. Oil on canvas, 58" × 35". The Philadelphia Museum of Art. Louise and Walter Arensberg Collection. © Duchamp 1991 VIS*ART Copyright Inc.

In the second half of the twentieth century the arts of Western civilizations have been characterized by innovation, by experimentation, and by numerous trends and styles which at times rapidly succeeded one another, at other times merged, or existed simultaneously. This trend toward experiment has continued until today, fostered and encouraged by the artistic freedom artists often have in contemporary society. In addition to this freedom, the inventions of new industrial materials (such as plastic or neon) and the achievements of science and technology created challenging new possibilities for artists.

Activity 1: Illusions of Motion

Recognize and discuss rational-formal artworks. Appreciate machinelike precision, mechanization, and movement as the subject matter of some contemporary artists.

Experimentation by contemporary artists with light and motion was popular during the 1960s and numerous kinetic* art exhibits took place in cities such as Paris, Amsterdam, and New York. In Paris, a large kinetic art exhibition was held in 1955 at the Denise Rene Gallery where works by Duchamp, Calder, Vasarely, Tinguely, and others were presented. Kinetic art images include two distinct categories – artworks that create the visual illusion of motion and those that actually move.

Turn to picture 15, Marcel Duchamp, *Nude Descending a Staircase*, in your *Art 31 Booklet of Reproductions*.

In this image the female form is portrayed in a series of movements that is stopped at different stages. This is similar to stop-action photography. Let your eyes follow the movement down the steps and you will notice how the shapes and lines are arranged to produce the illusion of a downward rhythm.

In Module 4 you became familiar with an art movement called Op art. Victor Vasarely is one of the artists who worked in this style. The following examples will show you how he uses geometric precision to create the illusion of movement. There is nothing left to chance in these paintings; every shape, line, and colour is precisely placed into an order to create the overall effect.

Turn to pictures 192 and 193, Victor Vasarely, *Kalota*, and *Vega-Kontash-Va*, in your *Art 31 Booklet of Reproductions*.

The British artist Bridget Riley creates similar optic* motion effects. However, she concentrates on variations of black or coloured lines which are designed into complex geometric patterns that imply movement when viewed.

View picture 194, Bridget Riley, *Orphean Elegy I*, in your *Art 31 Booklet of Reproductions*, and Illustration 178, Bridget Riley, *Fall*.

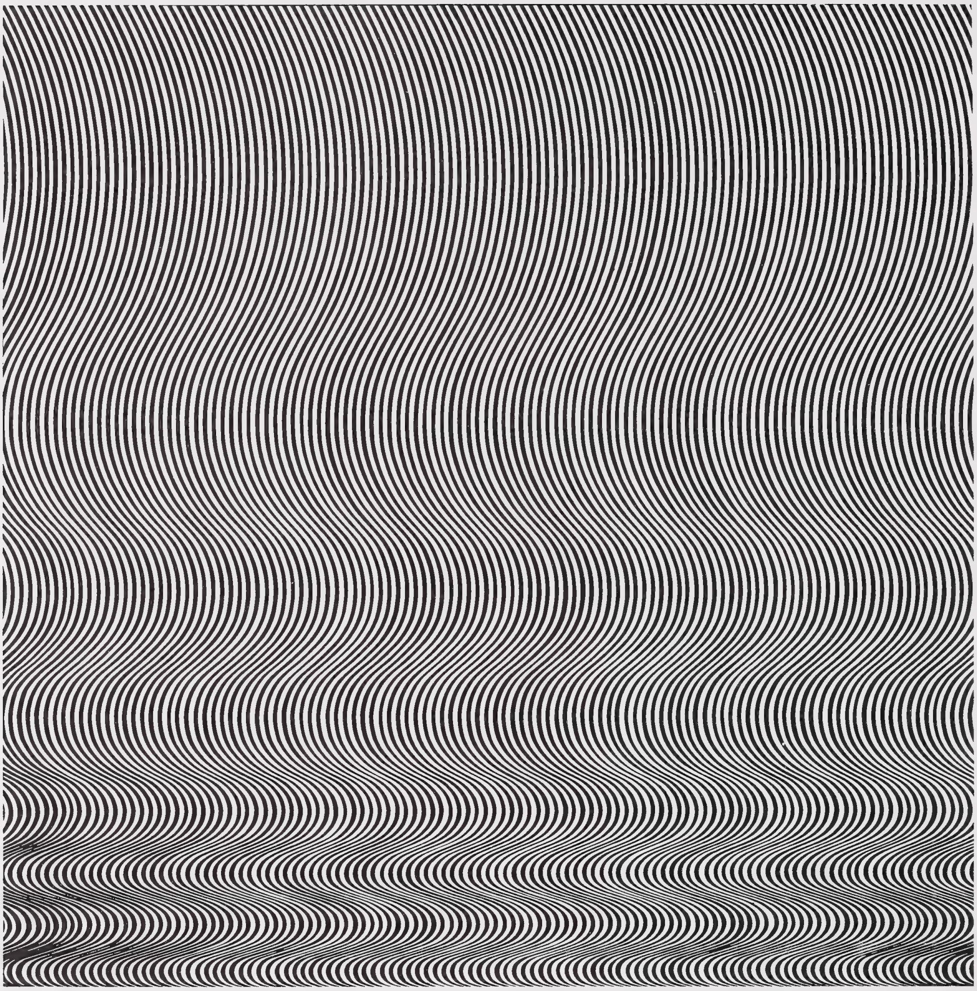


Illustration 178. Bridget Riley, 1931-____, Britain. *Fall*, 1963. Acrylic emulsion on hardboard, 141 × 141 cm. The Tate Gallery, London. ART Resources, N. Y.

1. Look at the two Riley paintings and record your reactions.

Review what you have learned about the Futurists in Module 5, Section 1. You will recall that the Futurists used rhythms to capture the idea of movement in two- and three-dimensional artworks. Their interest was in speed and machine technology. They fostered the destruction of symbols of the past such as museums and academies, because in their opinion, these held up technological progress. You will recall from Module 5 that the Italian government in the 1930s used futurist art to proclaim the power of the modern fascist state. In 1910 the Futurists proclaimed in their manifesto "the roaring automobile is more beautiful than the *Winged Victory*." They wanted people to begin looking at the shapes of twentieth-century machinery with a sense of admiration. One of their founding members, Umberto Boccioni, was a talented painter and sculptor.

You Choose

If you have access to the laserdisc *Sightlines*, find and view frame 11579.

OR

Turn to picture 83, Umberto Boccioni, *Unique Forms of Continuity in Space*, in your *Art 31 Booklet of Reproductions*.

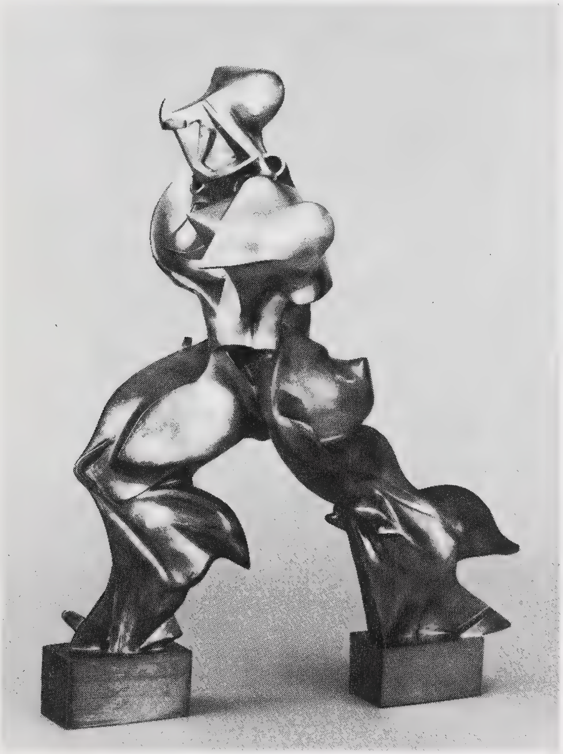


Illustration 179. Umberto Boccioni, 1882-1916, Italy. *Unique Forms of Continuity in Space*, 1913. Bronze, 111 cm high. Museum of Modern Art, New York. Acquired through the Lillie P. Bliss Bequest. *Sightlines* 11579.

This sculpture, Illustration 179, is a forceful, moving male figure that reveals several stages of walking simultaneously. Boccioni used abstract rather than representational forms to create a striding figure.

Joseph Stella came from Italy to the United States when he was twenty-five. In one of his early works the influence of motion is already evident: the flashing light, the chaotic* repetitious mechanical movement, and the use of lines as light beams.

Turn to picture 195, Joseph Stella, *Battle of Lights, Coney Island*, in your *Art 31 Booklet of Reproductions*.

Stella returned for a time to Italy when Futurism was developing, and became a follower of their movement. His painting of the Brooklyn Bridge is a “visual praise” of an urban steel structure.

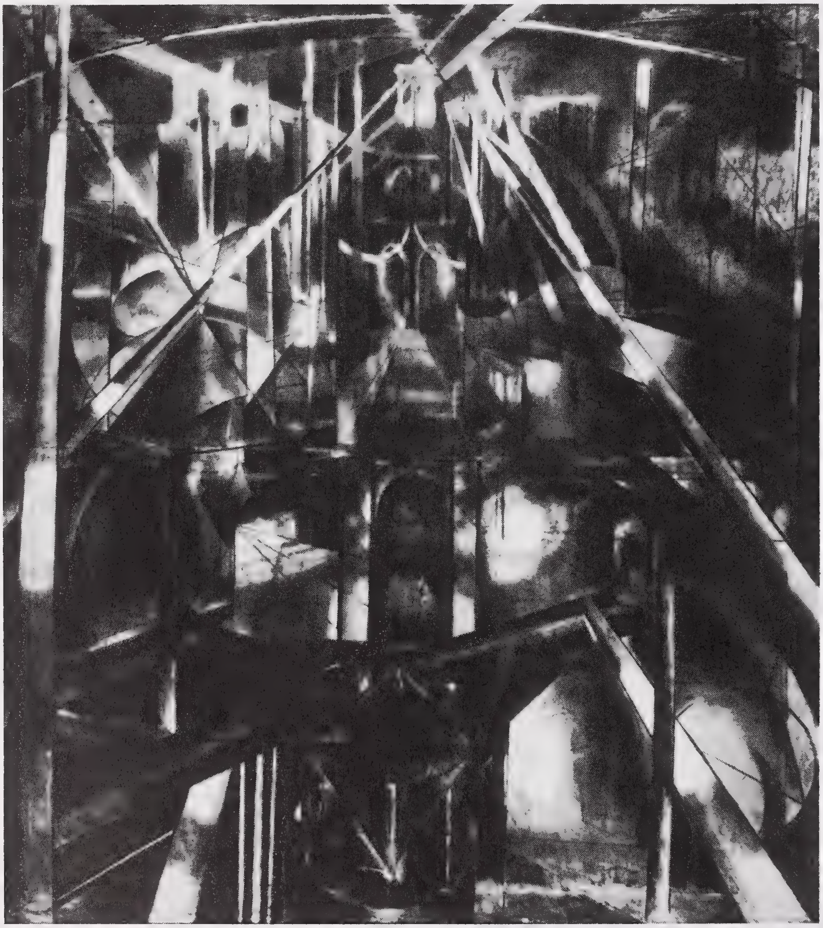


Illustration 180. Joseph Stella, 1880-1946, U.S.A. *Brooklyn Bridge*, 1917-18. Oil on canvas, 214 cm × 194 cm. Yale University Art Gallery, New Haven, Connecticut. Collection of Societe Anonyme. © Stella 1991 VIS*ART Copyright Inc. *Sightlines* 11459.

A similar work evokes the same mood.

You Choose

If you have access to the laserdisc *Sightlines*, find and view frame 11458.

OR

Turn to picture 196, Joseph Stella, *New York Interpreted V: The Bridge*, in your *Art 31 Booklet of Reproductions*.

Answer the following questions.

2. How is the illusion of movement created in Joseph Stella's *Brooklyn Bridge*?

3. What reasons can you give why the artist uses night scenes for his compositions?

4. Such glorification of mechanized forms is a positive expression of twentieth-century technology and is the opposite of German Expressionism which you studied in a previous module (Module 3, Section 2). You will recall that German expressionists saw mechanization as dehumanizing. How do you feel about the mechanized twentieth century?

5. What is the *Winged Victory* mentioned by the Futurists?

6. What does the name *Futurist* imply to you?

7. In a paragraph explain why the artworks you have looked at in this section can be designated as rational-formal. Provide examples from the images you have studied.

8. The illusion of motion interpreted and portrayed by artists is characteristic of some twentieth-century art styles and movements, the concept of motion has been consistently portrayed throughout art history. Provide several examples from different art periods that you have studied that portray the illusion of motion in an artwork.

9. Complete this activity by selecting two works presented in this section. Note how they are different, and how they are alike. In your critical analysis include how successful the artist was in creating the illusion of motion. Explain the reasons why you selected these particular artworks.

Check your answers by turning to the Appendix, Section 2: Activity 1.

Activity 2: Kinetic Art

Define and describe Kinetic art. Understand that the invention of new materials fostered non-traditional artforms.

Kinetic art is art that moves. Some Kinetic art is closely related to actual machines. The artist must have the imagination and ability to visualize and the scientist's technical knowledge to create works that move. Sometimes images suggest moving machines. The idea of motion in art is not new. Some works are sketches, and drawings, and paintings of machines.

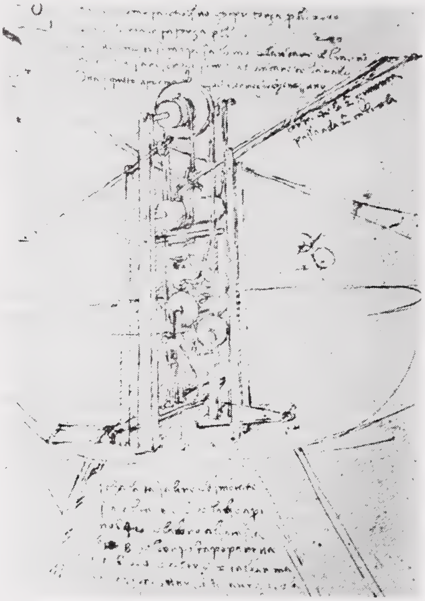


Illustration 181. Leonardo da Vinci, 1452-1519, Italy. *Study for a Flying Machine.* Drawing. Reproduced with permission of ART Resource, New York. *Sightlines* 6151.

Leonardo da Vinci was not only a great artist but also an inventor. He filled his notebooks with sketches of aircrafts, armoured tanks, and submarines hundreds of years before their existence. This helicopter-like machine is an example from one of his notebooks.

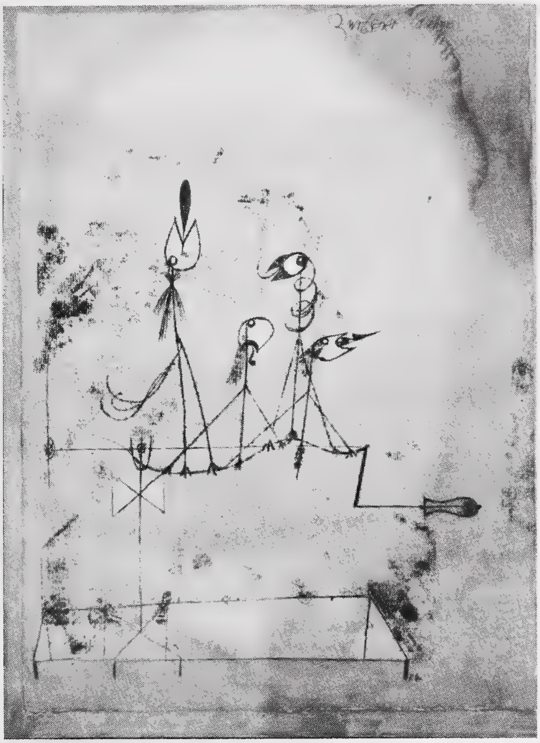


Illustration 182. Paul Klee, 1879-1940, Switzerland. *Twittering Machine*, 1922. Watercolour, pen, and ink. 16 1/4" × 12". Collection, The Museum of Modern Art, New York. Purchase. *Sightlines* 11254.

A more recent example is the delightful and intriguing *Twittering Machine* by Paul Klee. Here Klee shows a machine, which when cranked should create the sounds of twittering birds.

1. Are you amused by this work? Write down words, phrases, or sentences that express your feelings.

The influence of Constructivism in Kinetic art is evident in works that are assembled from many parts. Constructivism was at the beginning mainly a Russian art movement, brought to Russia (1917) by artists who studied in Paris. These artists combined several forms into relief and three-dimensional compositions. This method differs greatly from traditional sculptural forms which were carved or modelled from a material such as stone, marble, wood, or clay.

It may interest you to learn that "moving" sculpture has a long history. The Greeks of Alexandria made some very sophisticated "moving" sculpture, including the world's first slot-machines and jukeboxes. Indeed, Cleopatra brought as a gift to Ceasar a model of her palace which featured figures which moved from room to room, doors opening and closing as they proceeded. The motion was powered by water. Also, clockwork figures were a common feature of European cities, and still are in places like Bern and Nuremberg. You might think of kites as moving artworks. You might also consider the long history of fountains as sculpture.

In any case, from drawn machines to actual moving sculptures was a logical step for twentieth-century artists to take. Actual movement thus became an important addition to sculpture and created Kinetic art. Some artists relied on air only, others used motors or lights to bring sculptures to life, uniting science, technology, and art. The combining of art and technology and new materials opened up new possibilities for artists. Sculpture, especially, was moving further and further away from traditional materials and methods.

An American, Alexander Calder, was one of the artists who made a major art form of motion. It is also interesting to know that Calder had a background in engineering. Calder's mobile constructions are abstract shapes, suspended on wire, so delicately balanced that movement is created by normal air currents.

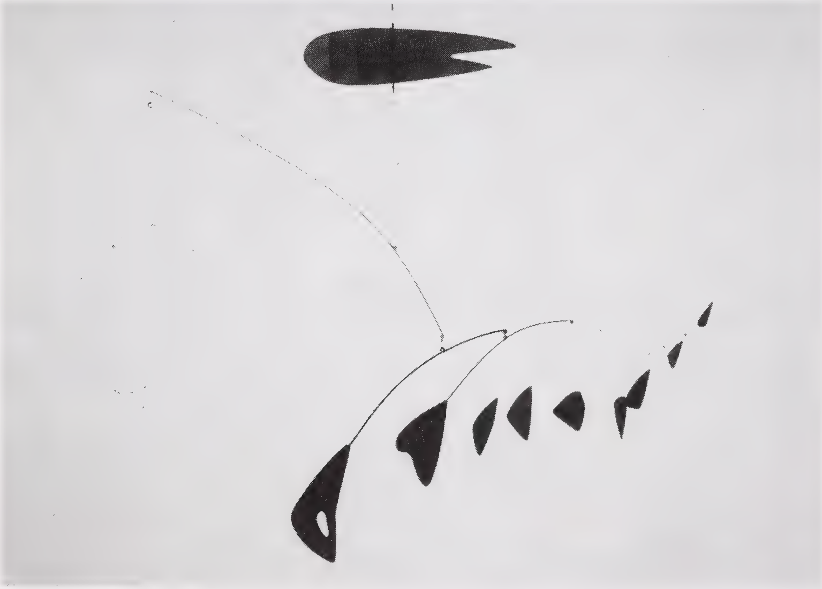


Illustration 183. Alexander Calder, 1898-1976, U.S.A. *Lobster Trap and Fish Tails*, 1939. Painted steel wire and sheet aluminum, about 257 × 292 cm. The Museum of Modern Art, New York. © Calder 1991 VIS*ART Copyright Inc. *Sightlines* 9803.

The mobile (Illustration 183) is created with painted steel wire and shapes cut from sheet aluminum. Look at the places where the rods are joined by carefully organized sets of loops. The joining of the wire and metal shapes has to be meticulously balanced so that the mobile will move.

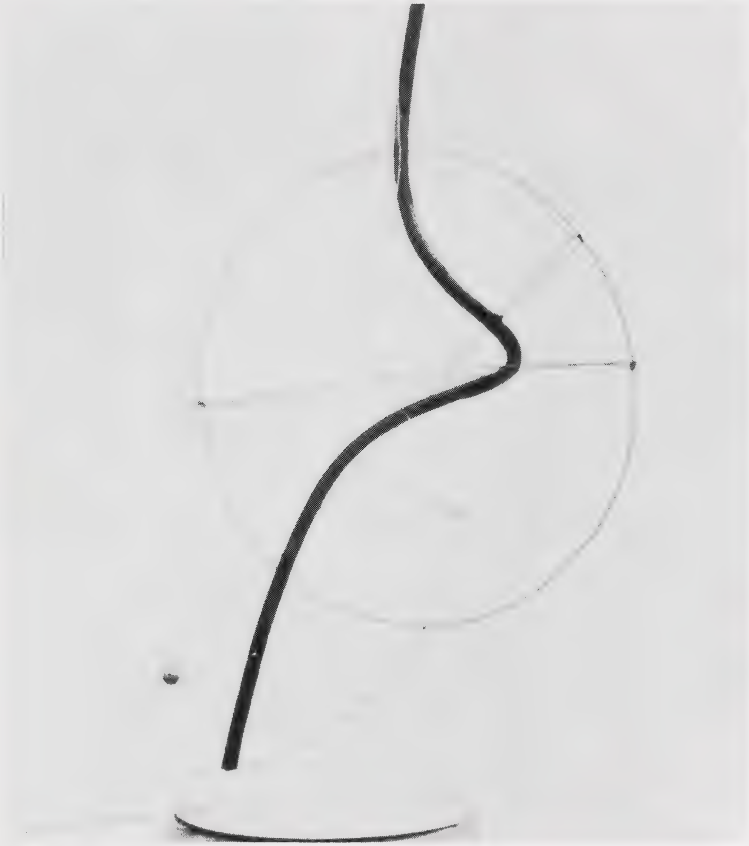


Illustration 184. Alexander Calder, 1898-1976, U.S.A. *A Universe*. Motorized mobile, 1934. The Museum of Modern Art, New York.. © Calder 1991 VIS*ART Copyright Inc.

Calder also created artworks that are called stabiles: a stabile has a stationary base and moveable parts. See Illustration 184.

In this work the shapes and wire circle around the base as long as electricity is provided for the motor.

Another example of a stabile is a work by Len Lye who came to the United States from New Zealand.

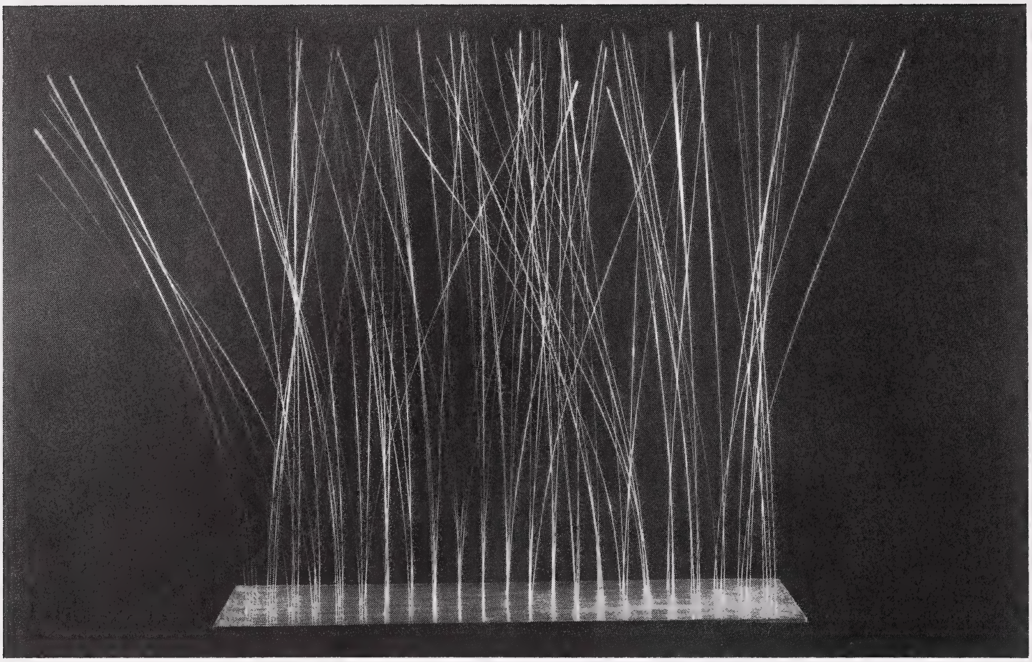


Illustration 185. Len Lye, 1902-1980, New Zealand. *Grass*, 1965. Stainless steel wire in wood, motorized and programmed, 36" × 35 5/8". Albright-Knox Art Gallery, Buffalo, New York. Gift of Howard Wise Gallery.

Here the artist has inserted fine stainless steel wires into a wooden base. A programmed motor moves the wooden base gently from side to side which causes the fine steel wire to sway giving the impression of waving grass – a very ingenious* way to create the idea of grass moving in the wind.

Moving sculptures became of interest to many contemporary artists who explored many variations. The sculpture of the Pennsylvania-born artist, Alice Aycock, combines numerous nontraditional sculpture forms and materials.

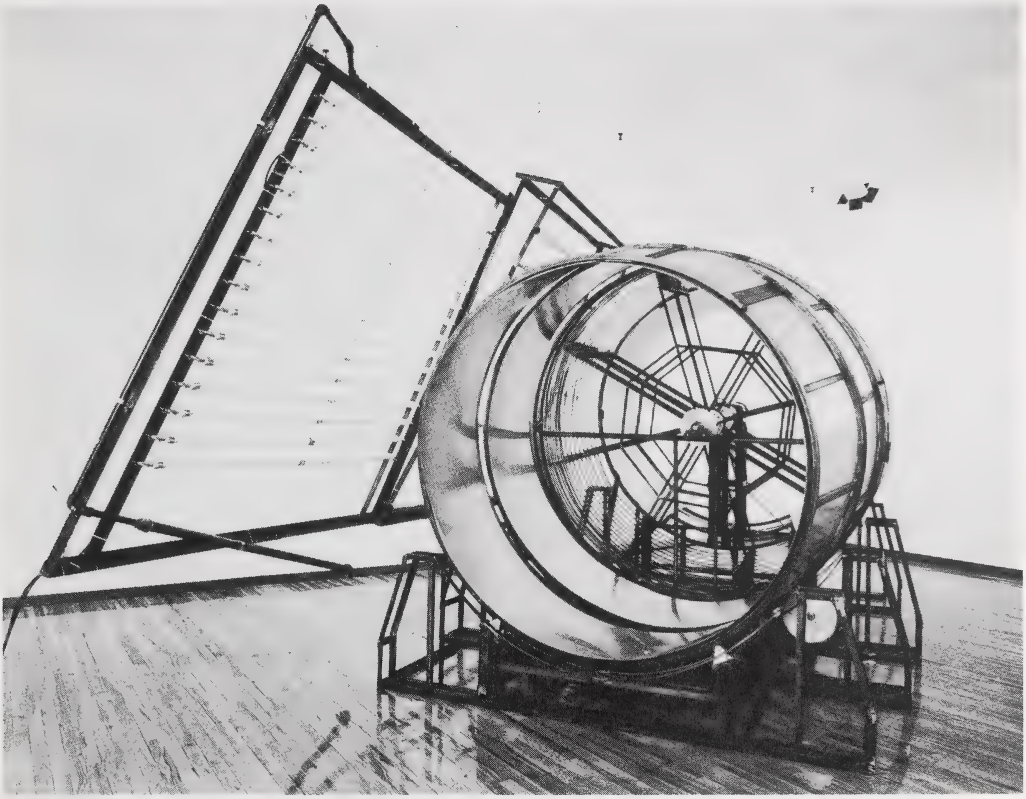


Illustration 186. Alice Aycock, 1946-____, U.S.A. *The Savage Sparkler*, 1981. Steel, sheet metal, heating coils, fluorescent lights, motors, fans, 10 × 14 × 8 ft. Plattsburg State Art Galleries, Permanent Art Collection. SUNY-Plattsburgh, Plattsburgh, New York. By permission of the artist. Photographer Jon Abbot.

Here steel, sheet metal, heating coils, fluorescent lights, motors, fans, and a bedspring are constructed into a huge, complex, machinelike work. Her indoor works usually suggest the threat of mechanized violence synonymous with war machines. The phrase "dimensions variable" applies to many of her sculptures, suggesting that the combination of their parts have no fixed relationship and can be changed to suit each environment. Environmental art is often sculpture that creates its own environment within a pre-existing interior space.

Jean Tinguely, a Swiss artist, first constructed sculptures from machine parts. His major work, which occupies the entire square in front of the opera house in the centre of the town, is in Basle, Switzerland. This sculpture is operated in part by electricity and in part by water. Look at Illustration 187.

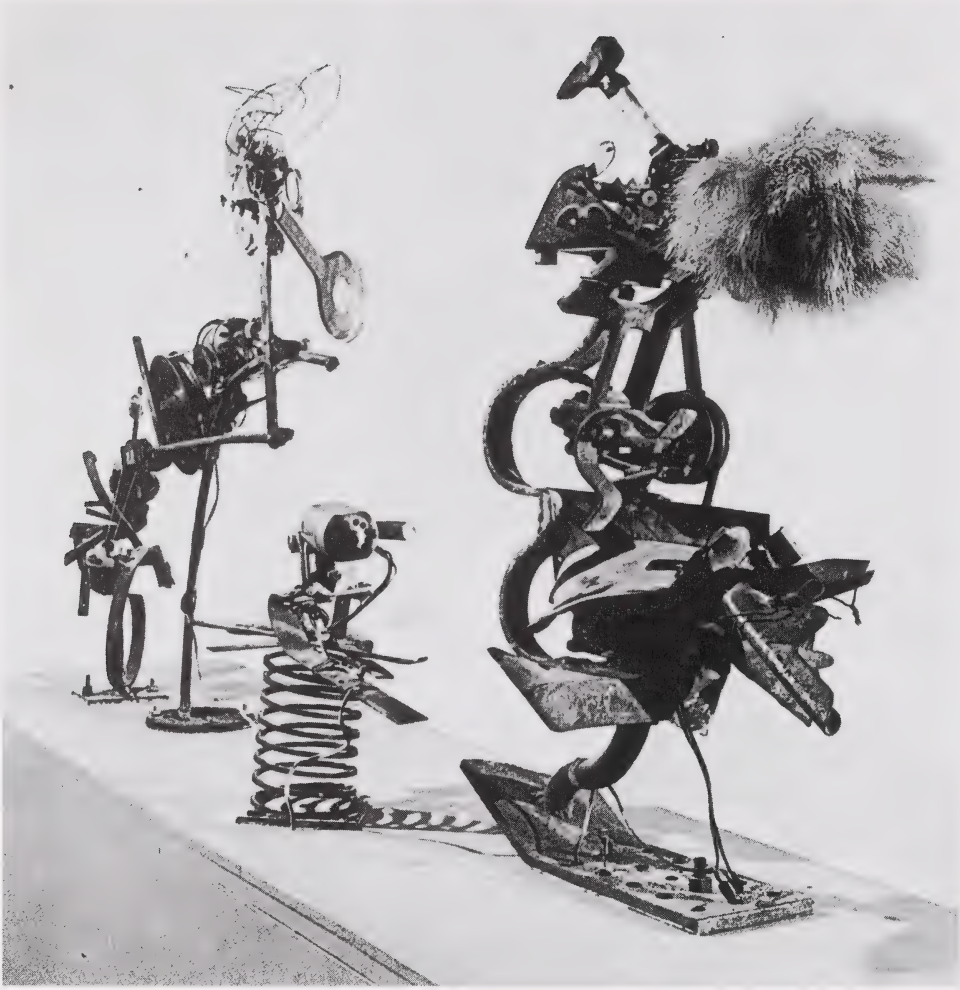


Illustration 187. Jean Tinguely, 1925-1991, Switzerland. *Pop, Hop and Op & Co.*, 1965. Painted steel, toys, feathers, etc. with motor, 3' 7 1/4" × 6' 10 5/8". Stedelijk Museum, Amsterdam. Used with permission of Ms. De Saint Phalle for the Estate of Jean Tinguely.

Tinguely's work evolved into machinelike sculpture that will move and then "self-destruct". See Illustration 188.

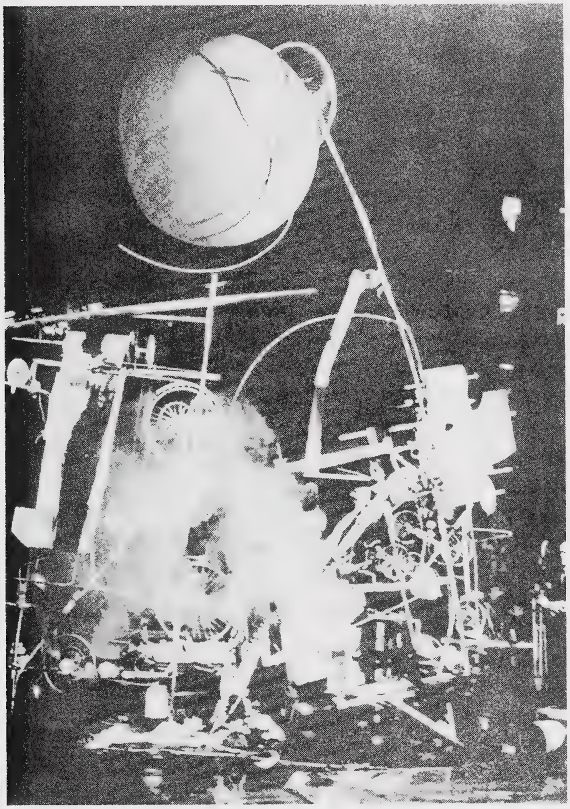


Illustration 188. Jean Tinguely, 1925-1991, Switzerland. *Homage to New York*, 1960. Just prior to its self-destruction in the garden of the Museum of Modern Art, New York. Photographer David Gahr. Used with permission of Ms. De Saint Phalle for the Estate of Jean Tinguely.

This work was a large, motorized machine-junk assembled sculpture with a weather balloon on top. The assembled parts were designed and combined so that the sculpture would destroy itself when plugged into an electric outlet. The "self-destruction" was completed for an audience of viewers in the garden of the Museum of Modern Art in New York, 1960.

Another sculptor, Nicholas Schoffer, makes use of the new computer technology. He has named a number of his ingeniously programmed sculptures CYSPS, which is derived from cybernetics* and spatiodynamics.* See Illustration 189.

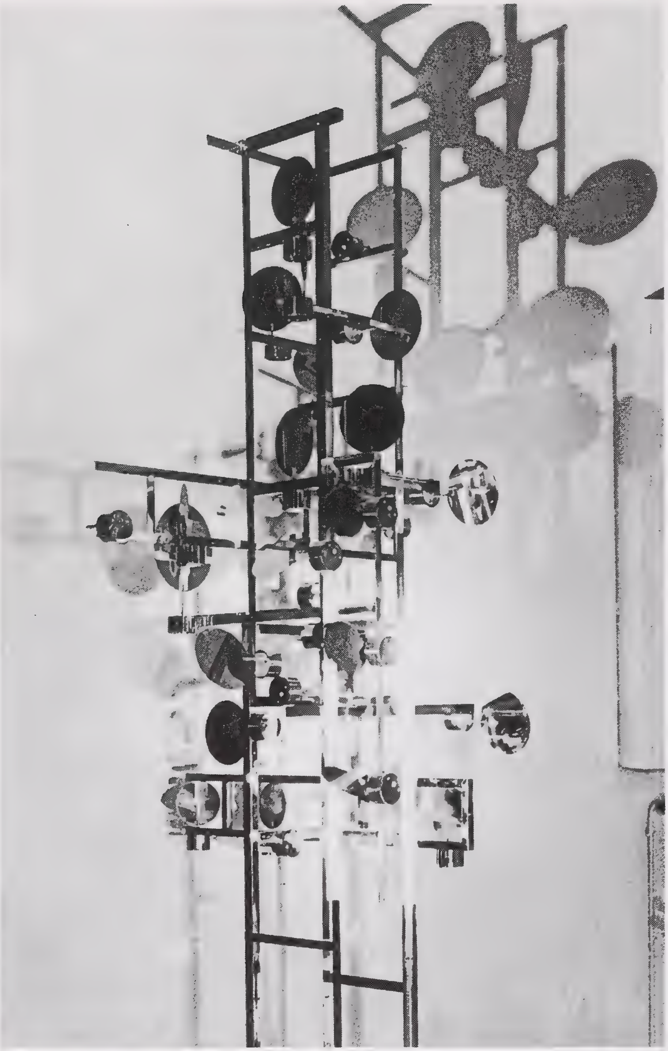


Illustration 189. Nicholas Schoffer, 1912-____, France. *Chronos 8*, 1967-68. Stainless steel and motors, 9' 10 1/8" × 49 1/4" × 51 1/8". Collection of the artist. © Schoffer 1991 VIS*ART Copyright Inc.

Schoffer's works move, rotate on their platforms, and project coloured light. Plans have been approved for the artist to build a tower in Paris, higher than the Eiffel Tower, which will perform electronic concerts, present light shows, and also function to provide weather and traffic information.

The moveable sculpture created by the Canadian artist, Ulysse Comtois, is a very different kind of sculpture. When you visit a museum or art gallery you will see signs that say "Please don't touch." Well, this artist hopes you do touch his work and thus move the suspended plate-like forms that are attached to a centre rod.

Turn to picture 197, Ulysse Comtois, *Colonne*, in your *Art 31 Booklet of Reproductions*.

The forty-eight moveable shapes can be arranged into numerous combinations, thereby creating each time it is moved a different sculptural form, so the work is everchanging through human hands.

After looking at the works in this activity answer the following questions.

2. A sculpture that moves has a greater effect on the viewer. Do you agree or disagree with this statement? Why or why not?

3. What limitations have artists imposed on sculptures that move?

4. How do sculptures that move differ from functional objects that move, e.g., a mixmaster or a car?

Check your answers by turning to the Appendix, Section 2: Activity 2.

Activity 3: Plastic as a Sculptural Material

Understand that the invention of new materials fostered non-traditional artforms.

Plastic is a by-product of petroleum and can be manufactured into opaque or transparent materials. Just look at some of the plastic products you might use every day such as plastic wrap, plastic dishes, or your ballpoint pen. The transparency and durability of plastic was a natural combination for sculptures and was used by artists like Naum Gabo and Antoine Pevsner.

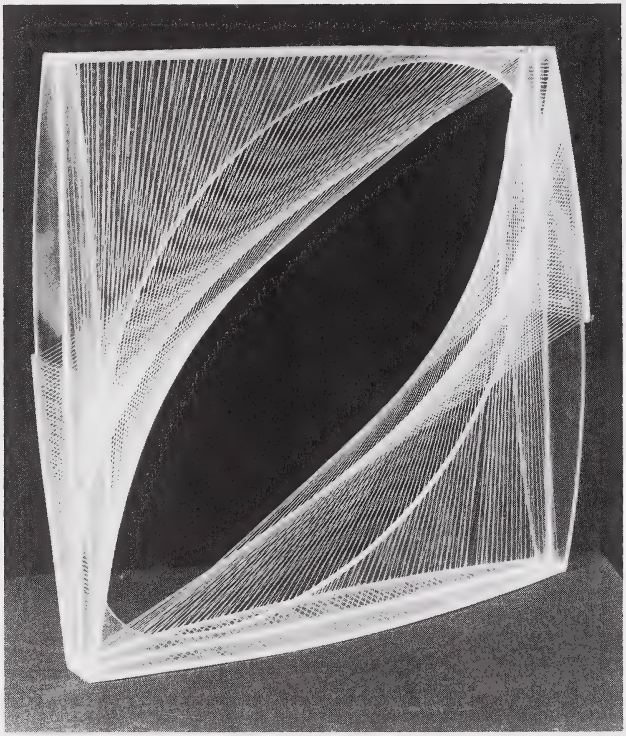


Illustration 190. Naum Gabo, 1890-1977, U.S.A. (Russian born). *Linear Construction*, 1942. Plastic with plastic threads, 35.5 × 34.5 × 9 cm. Tate Gallery, London. ART Resource, N.Y.

Naum Gabo, who began his career as a constructivist* artist, was also one of the first artists to use transparent plastic as a sculptural material. See Illustration 190.

This work is created entirely with plastic and plastic threads. Another example is a sculpture by Antoine Pevsner. The transparent plastic material allows light to pass through the entire form.

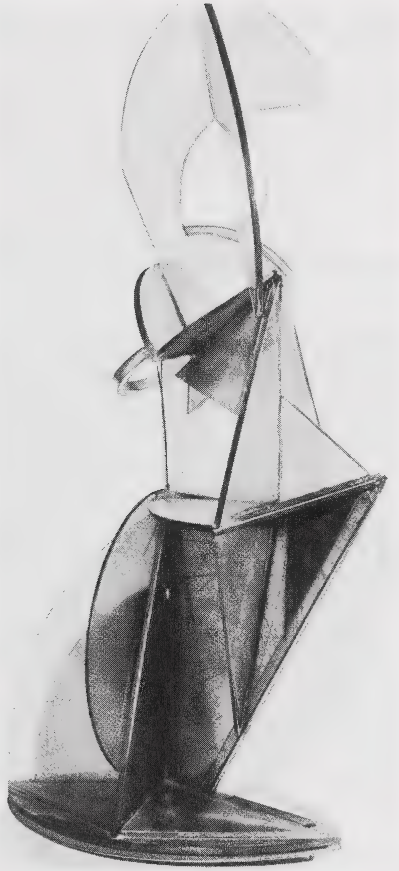


Illustration 191. Antoine Pevsner, 1882-1962, France. *Fountain*, 1925. Plastic, 15 3/4" high. Collection S. and C. Giedion Welcker, Zurich. © Pevsner 1991 VIS*ART Copyright Inc.

1. Do you recall how analytical cubism* allowed one to see several parts of an object at the same time? How do *Linear Construction* and *Fountain* allow you to experience all parts of the sculpture simultaneously?

2. Because the forms are transparent the volumes of space and of solid are not evident. How does this differ from volume and mass surrounded entirely by space in traditional sculptures such as Michelangelo's *David*?

Check your answers by turning to the Appendix, Section 2: Activity 3.

Activity 4: Light Art: Neon

Understand that technology and art merge to create Light art.

The concept of natural and electric light combined with new materials fascinated many artists. A concept is an idea which is then made visible through a skill or technique the artist uses. **Light art** is the exploitation of the visual excitement of natural or electric light in a work of art. Light artworks are the result of combining light and art concepts.

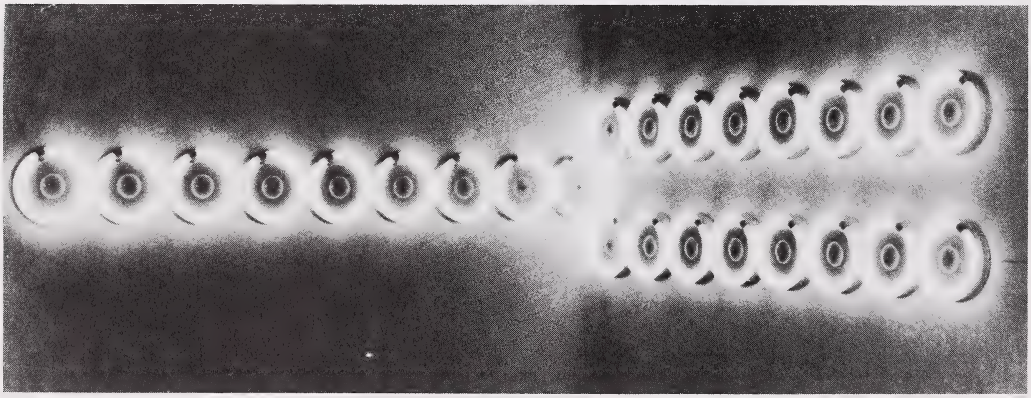


Illustration 192. Dan Flavin, 1933-____, U.S.A. *Untitled*, 1975. Daylight, warm fluorescent light, wall #1, 30 × 244 cm; wall #2, 86 × 244 cm. Leo Castelli Gallery, New York. © Flavin 1991 VIS*ART Copyright Inc.

Even a simple Light art arrangement of a few lights in an artwork means the artist must understand how to incorporate and design with electricity. This means combining electric lights with other forms into an artistic composition similar to the use of bright, illuminous colour in a painting. Think of the lights as you would think of colours and shapes in a hard-edge painting. When lit, the lights will dominate the composition just as would bright red lines placed on a dull green background.

More complicated Light art, using neon tubing, requires that the artist know how to bend the neon tubes into the shape of the design and how to adjust the intensity of the colours. Neon light, long used in commercial advertising, was used by artists such as Dan Flavin, and Vardea Chryssa for its aesthetic characteristics, exploiting its colours and forms.

Dan Flavin is an American artist who works with fluorescent light as his material. Forming glass tubes and filling them with gas, he designs light environments by attaching his light forms to walls and ceilings. See Illustrations 192 and 193.

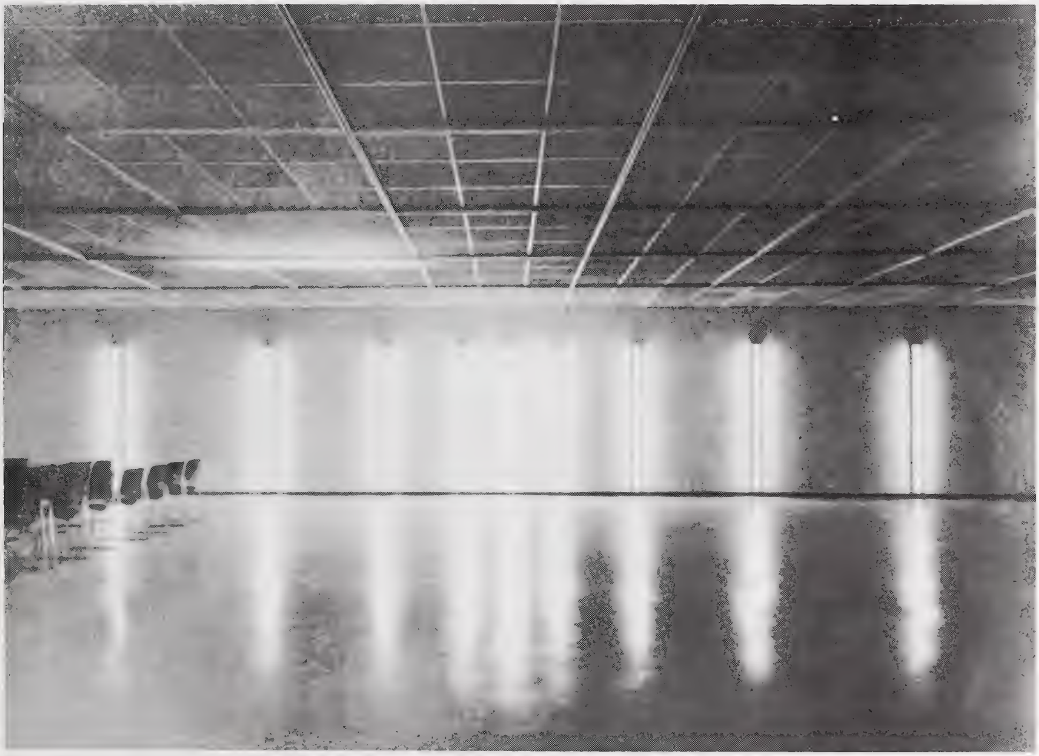


Illustration 193. Dan Flavin, 1933-_____, U.S.A. Installation view of *Pink and Gold*, 1968. Light columns. Formerly Dwan Gallery, New York. © Flavin 1991 VIS*ART Copyright Inc.

As you can see, Flavin uses repeated geometric shapes, to create his environments.

Born in Athens, Vardea Chryssa studied in Paris and San Francisco before she worked in New York. Her works began to include neon tubing in 1962 and she has continued to experiment and create with this medium, combining it with various other materials into two- and three-dimensional works.

Examine again her work *That's All* shown in picture 159 in your *Art 31 Booklet of Reproductions*.

The neon lights in this relief triptych* are connected to an automatic timer which turns different lights on and off. The materials used for this work are neon, plexiglas, electrodes, asbestos, and paper.

Turn to picture 198, Chryssa, *Ampersand III*, in your *Art 31 Booklet of Reproductions*.

Ampersand III, an intricate arrangement, is a freestanding work designed with neon lights in a plexiglass cube.

1. In what ways do you think these neon works created by artists differ from store and business signs that are created to communicate a message?

2. If you were to purchase one of these neon sculptures where could you place it? Explain what essential preparations you would have to complete before the installation.

3. If artists create works that are not suitable for the average home, who will purchase their work?

Check your answers by turning to the Appendix, Section 2: Activity 4.

Activity 5: Environmental Art

Analyse contemporary sculptures as systems.

Some innovative contemporary Light art created by artists borders on science fiction. For example, *The Lightning Field* an environmental installation by Walter De Maria occupies part of a desert valley floor in New Mexico. Here the artist has combined technology, art, and nature. The installation was completed in 1977 and consists of 400 stainless steel poles which have sharpened points, like needles. The poles are installed into a grid pattern which is one mile long and one kilometre wide. Any one of these poles can, in theory, act as a lightning rod for the numerous electrical storms that frequently happen over that part of the desert.

Turn to picture 199, Walter De Maria, *The Lightning Field*, in your *Art 31 Booklet of Reproductions*.

Another environmental work is created with mirrors and light. In 1966, Lucas Samaras constructed a large open wooden framework which he mounted with mirrors inside and out. A room is placed inside this mirrored environment and this room is also faced on the inside and outside with various mirrors. If a spectator moves into the lit mirrored environment, there is a sensation of being suspended in space. Thus the sparkling space creates an entirely new experience for the viewer. See Illustration 194.

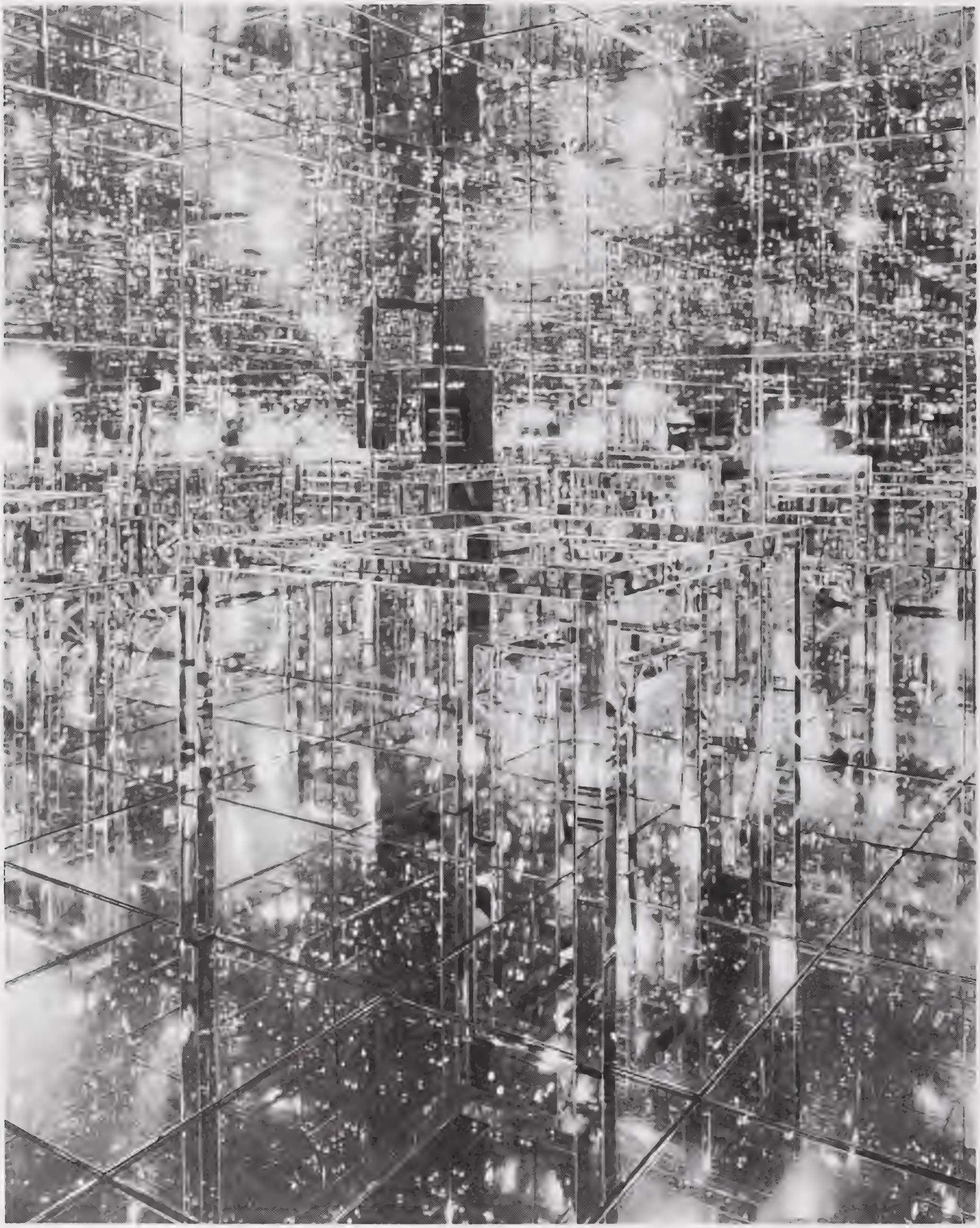


Illustration 194. Lucas Samaras, 1936-____, U.S.A. (born Greece). *Mirrored Room*, 1966. Mirrors 96" × 96" × 120". Albright-Knox Art Gallery, Buffalo. Gift of Seymour H. Knox, 1966.

Rockne Krebs uses laser* beams for his environmental art. Since laser beams shine without spreading, he is able to create linear patterns with them. He has created laser patterns over large urban centres, thereby creating giant light shows.

On a smaller scale Krebs designed an installation, *Day Passage*, at the Los Angeles County Museum of Art in 1971 that was constructed with several laser beams and numerous mirrors, which resulted in the laser light beams bouncing back and forth.

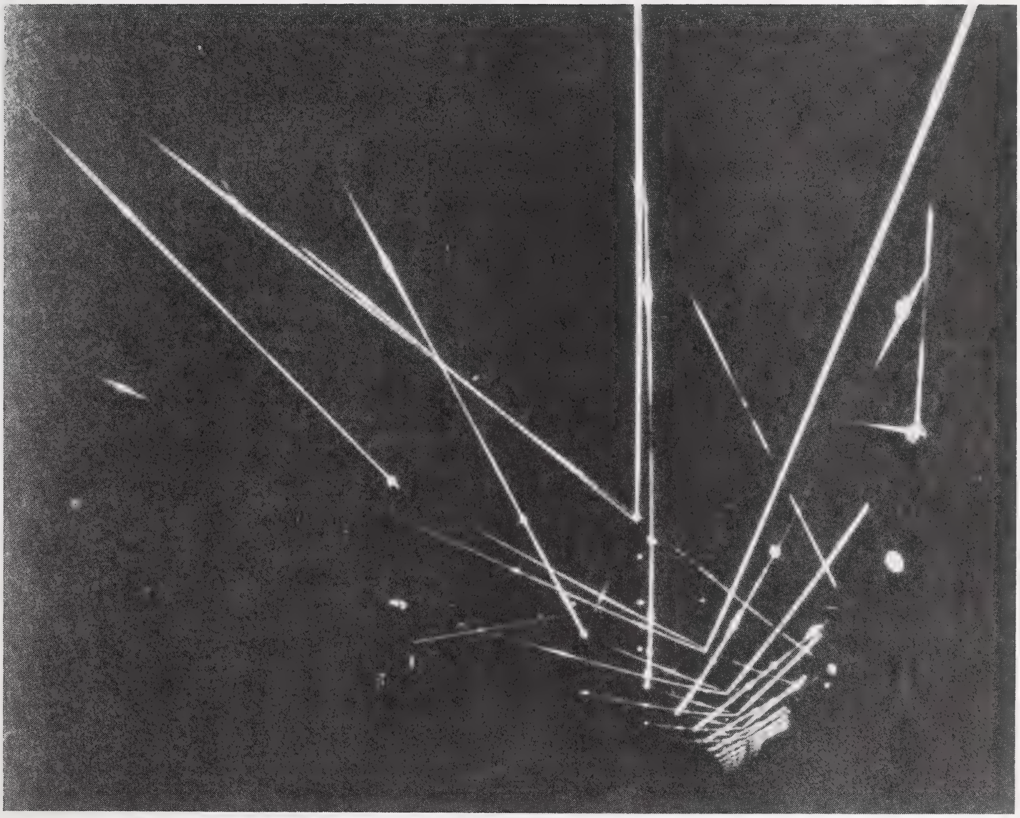


Illustration 195. Rockne Krebs, 20 c U.S.A. *Day Passage*, 1971. Argon, helium-neon lasers, mirrors; environment space 30.46 m, L-shaped corridor. Los Angeles County Museum of Art (with Hewlett-Packard Corporation). By permission of the artist.

In your experimental lab you have wires, pulleys, neon lights, steel poles, wires, mirrors, turntables, flashlights. Describe a moving work that you might invent to interpret the idea "Star Walk."

Check your answers by turning to the Appendix, Section 2: Activity 5.

Follow-Up Activities

If you had difficulty understanding the concepts in the activities of this section, it is recommended that you do the Extra Help. If you have a clear understanding of the concepts it is recommended that you do the Enrichment.

Extra Help: Review

1. Abstract Expressionism is a painting style in which artists communicate their emotional feelings through artworks. They apply paint freely to their canvasses in an effort to show their emotional state. Their work is characterized by a strong dependency on accidents, on chance, and intuitive responses. In point form, identify at least ten characteristics that show how rationalist-formalist works differ from abstract expressionist artworks.

2. Using only lines create a rationalist-formalist line drawing. (Look at the works of Bridget Riley and Vasarely again.) Attach the drawing to a page in your Visual Journal and give several reasons why the work is in a rationalist-formalist style.

Check your answers by turning to the Appendix, Section 2: Extra Help.

Enrichment: Creating a Mobile

Create a non-objective mobile with paper shapes, thread, and wire. Plan your mobile first on paper. When you are finished and the mobile is hanging, take a picture of it to place in your Visual Journal.

Check your answers by turning to the Appendix, Section 2: Enrichment.

Conclusion

You have been introduced to several innovative forms of art that use twentieth-century technology and materials. You have learned that some contemporary artists create works that require art knowledge, scientific know-how, and technical skills. You have learned that artists use actual moving parts, coloured lights, neon tubes, mirrors, and laser beams to create works of art.

Assignment Booklet

Turn to your Assignment Booklet and do the assignment for this section.

Note: After you have completed the work in the Assignment Booklet, go to Section 3 if you **do not** have access to a computer; go to Section 4 if you **do** have access to a computer.

SECTION 3

TECHNOLOGY: COMPUTER GRAPHICS AND ELECTRONIC MEDIA

The next time you see a television logo with spinning letters that look as though they had been cast in gold or silver, remember that you're probably watching an animation made with a computer; the next time you're in a video arcade keep in mind that someone trained as a computer graphic artist likely created the images you see on the video screen.

Computers, once regarded as useful only for calculating mathematical and scientific problems, have now become instruments that can be used for image creating. They are becoming easier to use, and you don't have to be a whiz at math or science to use them to make graphics. Today, both commercial and fine artists are discovering that the computer is a wonderful and versatile instrument for making images.

Upon completion of this section you will be able to

- examine the creation of still imagery using a computer with appropriate software
- examine some of the ways computers can be used for image creation
- discuss the advantages and disadvantages of making graphics with a computer
- compare image creation with a computer to image creation with traditional media
- discuss some of the uses of computer animation

A decade ago most people thought that computers were only useful in the world of math and science. Just a few years ago word processing* developed when people decided that computers could be used for writing and printing text. Today many people are discovering that the computer can be used as an instrument to make graphic images. Computer technology has changed very rapidly in the last decade. Some images that are now created look very realistic with millions of colours and millions of "pixels" (short for "picture elements" which are the dots that make up the images on a computer screen). See Illustration 196.

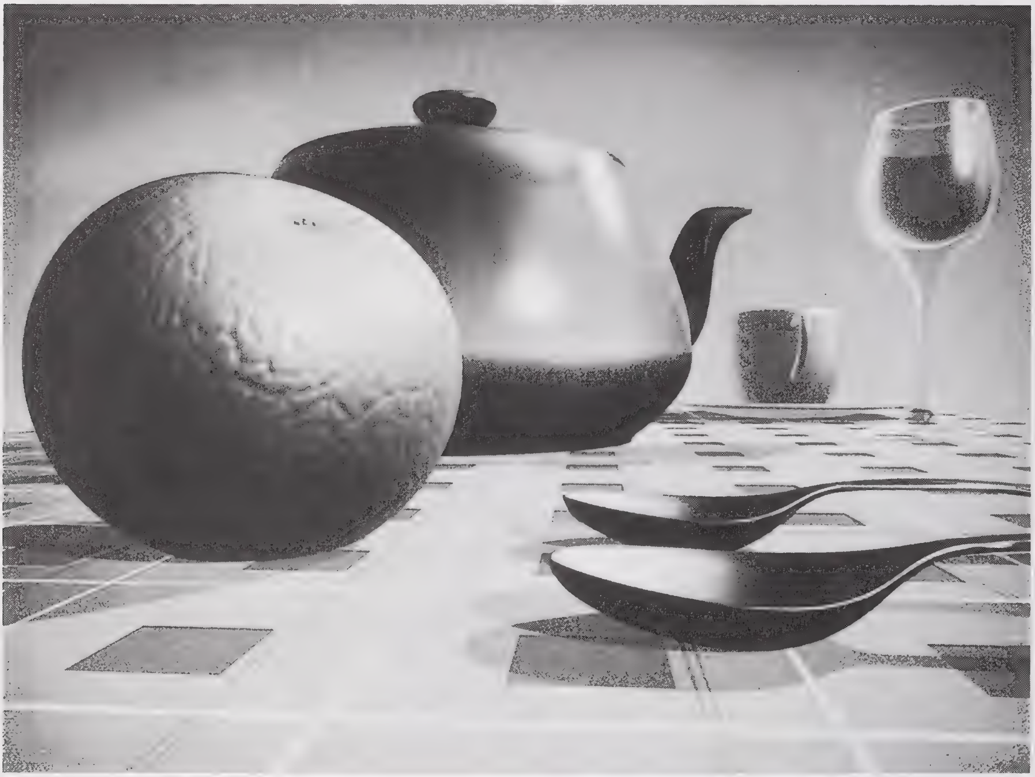


Illustration 196. *Table Top Scene Simulation.* Courtesy Information International, Inc.

Painting, drawing, and animation can be done with popular microcomputers* if you have the right software (program), an input device (a mouse or graphics tablet), and a colour monitor – if you want to depict colour. The concepts explored in this section look at the type of computer graphics that can be made with microcomputer systems using graphic and animation programs.

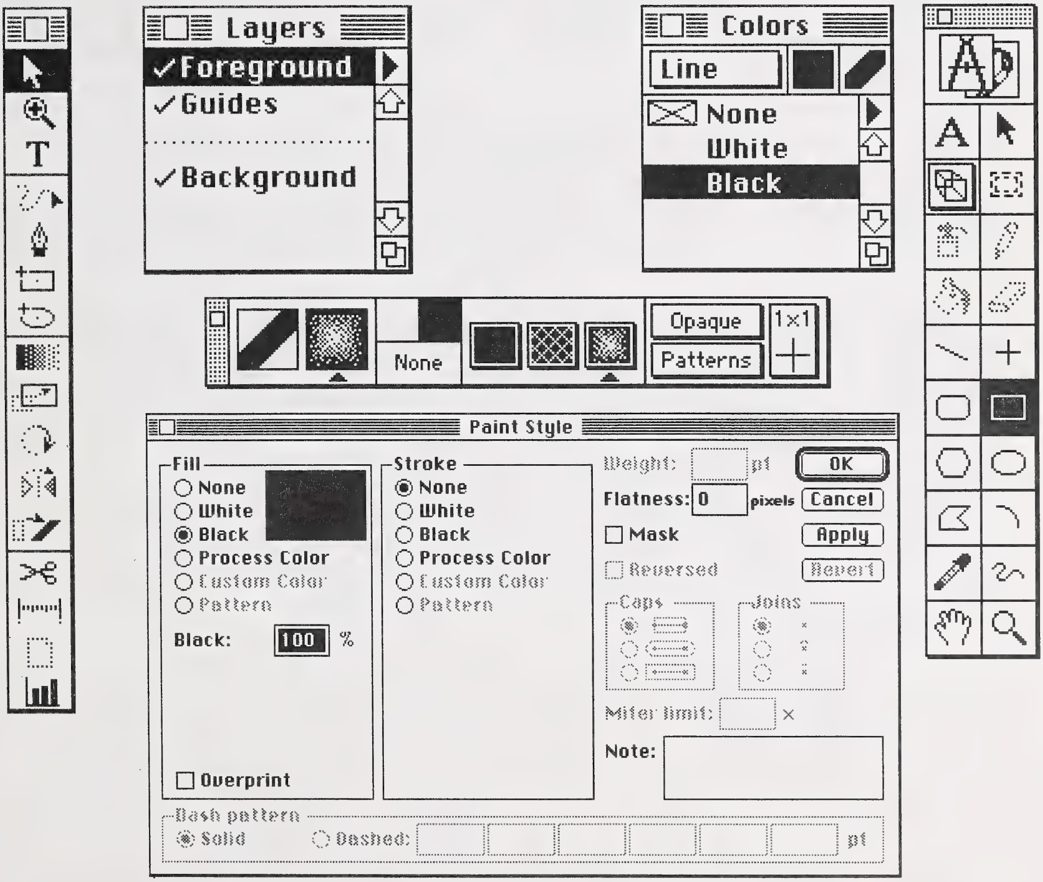
Activity 1: Exploring Computer Design

Observe the creation of still imagery using a computer with appropriate software. Compare image creation with a computer to image creation with traditional media.

Look at picture 200. Harold Cohen, *Colored Drawing* in your *Art 31 Booklet of Reproductions*.

Cohen's work, *Colored Drawing*, was created on a computer. Notice the shapes, lines, balance, and use of colour.

In order to use a computer to create design you need to start with a graphics program that includes a paint or drawing option. While graphics programs vary, they have similar features. They contain a variety of drawing tools, shape-making features (circles, squares, etc.), and colour selections.



Layers
✓ Foreground
✓ Guides
✓ Background

Paint Style

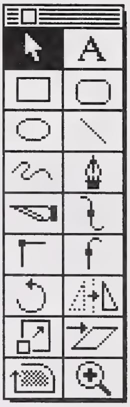
Fill
○ None
○ White
● Black
○ Process Color
○ Custom Color
○ Pattern
Black: 100 %
☐ Overprint

Stroke
● None
○ White
○ Black
○ Process Color
○ Custom Color
○ Pattern

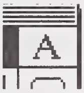
Weight: pt
Flatness: 0 pixels
☐ Mask
☐ Reversed
Miter limit: ×
Note:

Dash pattern
● Solid ○ Dashed: pt

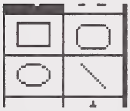
The following illustrations show the choices that are available with a program such as Aldus Freehand™ 3.0. This program provides several palettes to give quick and easy control of tools, colours, drawing layers, and style sheets. The first palette, demonstrated below and to the right, is the toolbox. The toolbox contains 18 tools that you use to draw, edit, or view your illustration.



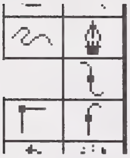
Pointer tool
The pointer tool is used to select, adjust, and move elements. (The background of this icon is black because this is the tool that has been selected for use.)



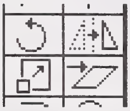
Text tool
You use the text tool to enter text in your illustration.



Basic-shape tools
The basic-shape tools let you quickly draw shapes such as rectangles, rounded-corner rectangles, ellipses, and lines.

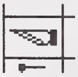


Freeform tools
Use the five freeform tools to draw any graphic shape you want.



Transformation tools
To rotate, create a mirror image, scale, or skew elements, use the four transformation tools.

Tracing tool
The tracing tool is used to trace paint-type graphics.



Knife tool
Use the knife tool to split a freeform path into two or more paths.

Magnifying tool
The toolbox also includes the magnifying tool which is used to change the view of your illustration.

Using an input device that works with your program, you can tell the computer to draw an image, place it where you want, and designate its size.

The following illustrations show the use of two common input devices – a mouse and a graphics tablet.

Illustration 196. a. Mouse

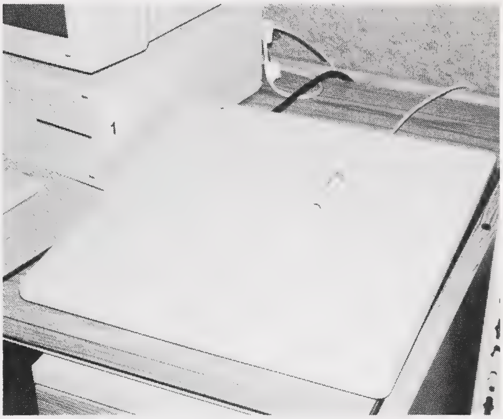


Illustration 196. b. Graphics Tablet

A mouse is an input device that you can use to point or draw on the screen. It is a small hand-controlled device that rolls on a flat surface; it controls the position of the cursor* on the screen. The mouse is connected to the computer and when it is moved, it sends signals to the computer to move the cursor on the screen quickly and easily. The mouse allows you to by-pass the keyboard making the computer easier to use.

The graphics tablet is a flat board-like surface used in combination with a pencil-like device called a stylus. The user draws on the graphics tablet with the stylus and the image appears on the screen. A selection tool, similar to a mouse, may also be used with a graphics tablet. (The stylus and selection tool are generally referred to as pointing devices.) Like a mouse, a pointing device provides input to a computer.

A pointing device provides precise selection or drawing capabilities, and is therefore an ideal design tool for graphic artists. When you press on the surface of the graphics tablet, the position of the pressure is transmitted to the computer, and the corresponding location on the screen is shown. Because a mouse creates a new point to draw from with every "touchdown," it may limit natural drawing capabilities.

1. What are the differences between drawing on paper and drawing with a computer?

2. Which do you think you would rather do and why?

Check your answers by turning to the Appendix, Section 3: Activity 1.

Activity 2: Creating Textures and Using Colour

Examine some of the ways computers can be used for image creation. Discuss the advantages and disadvantages of making graphics with a computer.

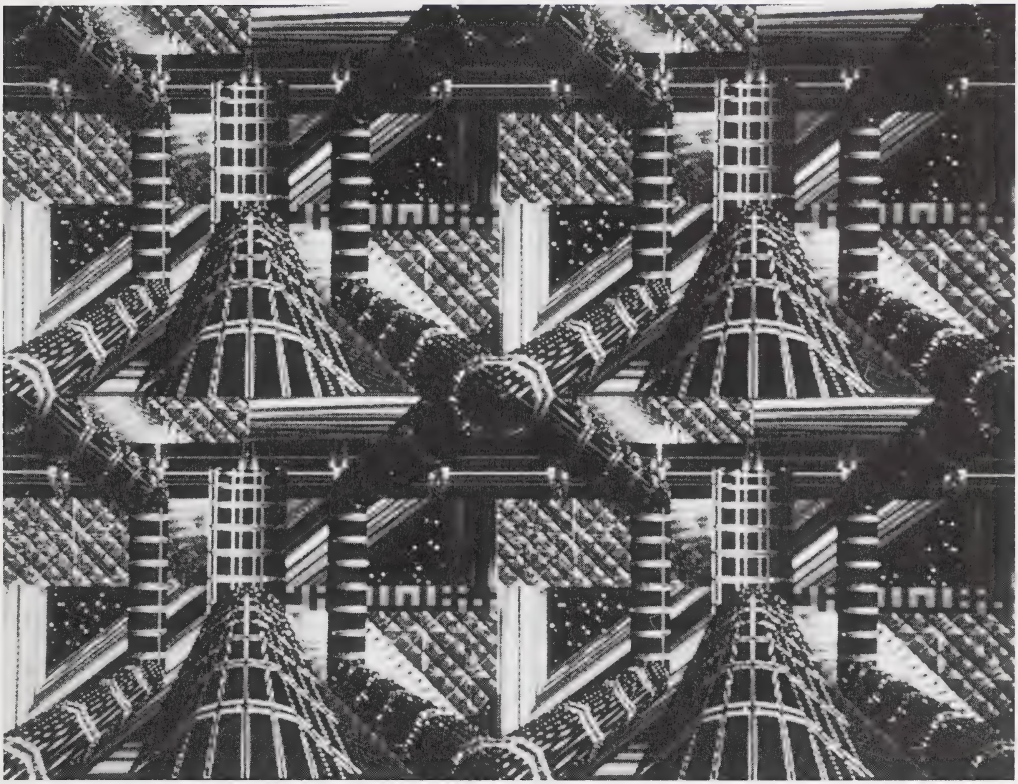
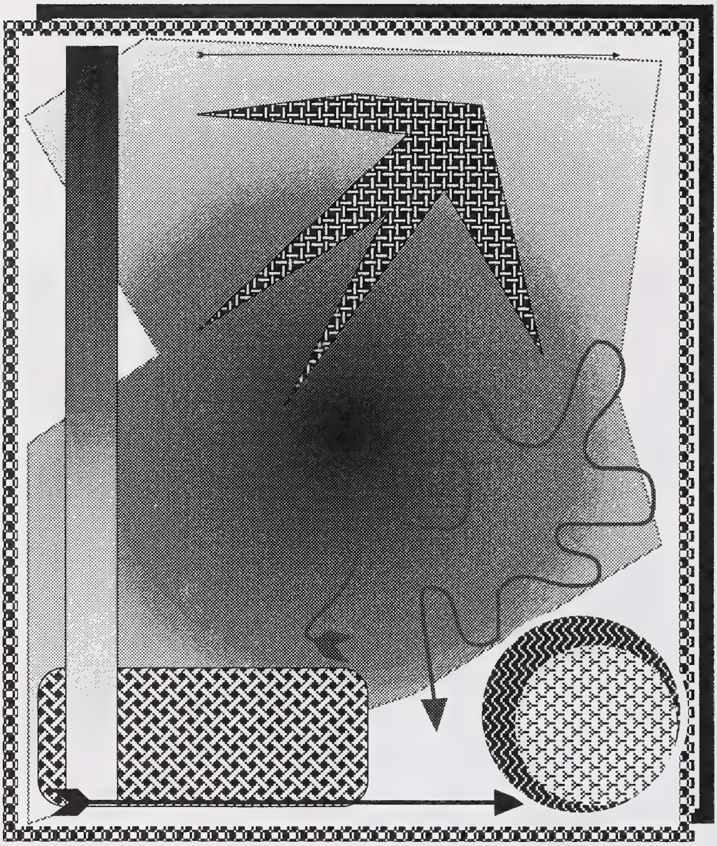


Illustration 197. David Em. *Escher*, 1979. Reproduced by permission of the artist. Courtesy of Spieckerman Associates, San Francisco.

Texture refers to how something feels. Textures can be rough, smooth, prickly, fuzzy, or velvety. The illustration of texture can be implied by a drawing or painting. See Illustration 197.

Some graphics programs contain a texture tool that makes different fill patterns or designs. (A fill is the colour, shading, or pattern inside a freeform path or basic shape.) This capacity is demonstrated in the illustrations that follow.



llustration 197. a. Computer design using textures.

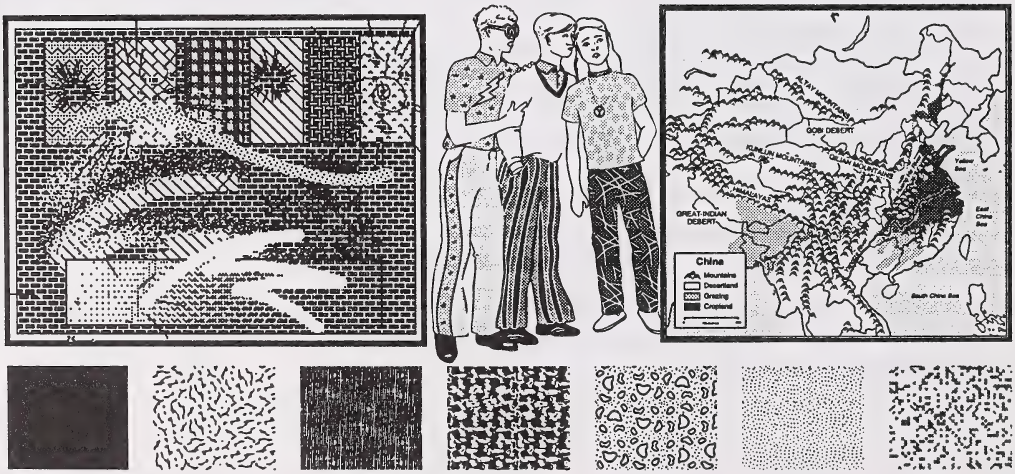


Illustration 197. b. Textures are often used to define line or shape in a given object.

Once an artist creates a variety of textures on screen, he or she can manipulate the textures to create interesting shapes, designs, or collages.

1. Is this a more effective way to create texture than the traditional methods? Why or why not?

Colour can be applied to fills and lines. Colours may refer to black, white, and various shades of grey, or it may refer to all the colours of the rainbow if you are using a colour monitor. If a computer system has a colour monitor (screen) and the capacity to display colours, the graphics program can make much more appealing images. You can quickly add a wide range of effects by applying different colours to your illustration. Producing different colour combinations can be very enjoyable and useful to the artist. See Illustration 197. c.

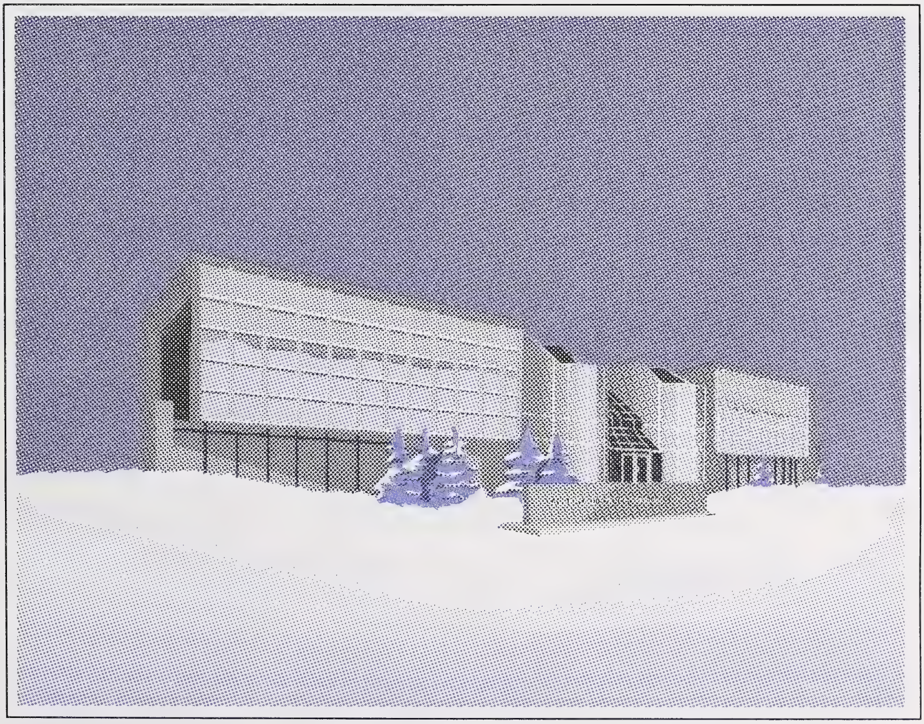


Illustration 197. c. Alberta Distance Learning Centre. Computer Drawing by Dave Bell, Graphic Artist, LRDC.

2. a. What might be the advantages for an artist in experimenting with a colour computer program?

b. What might be the drawbacks?

Check your answers by turning to the Appendix, Section 3: Activity 2.

Activity 3: Computer Styles

Observe the creation of still imagery using a computer with appropriate software. Examine some of the ways computers can be used for image creation.

Just as there are different styles and approaches to painting in acrylic or oils, there are different styles that can be used when using a graphics program with a computer.

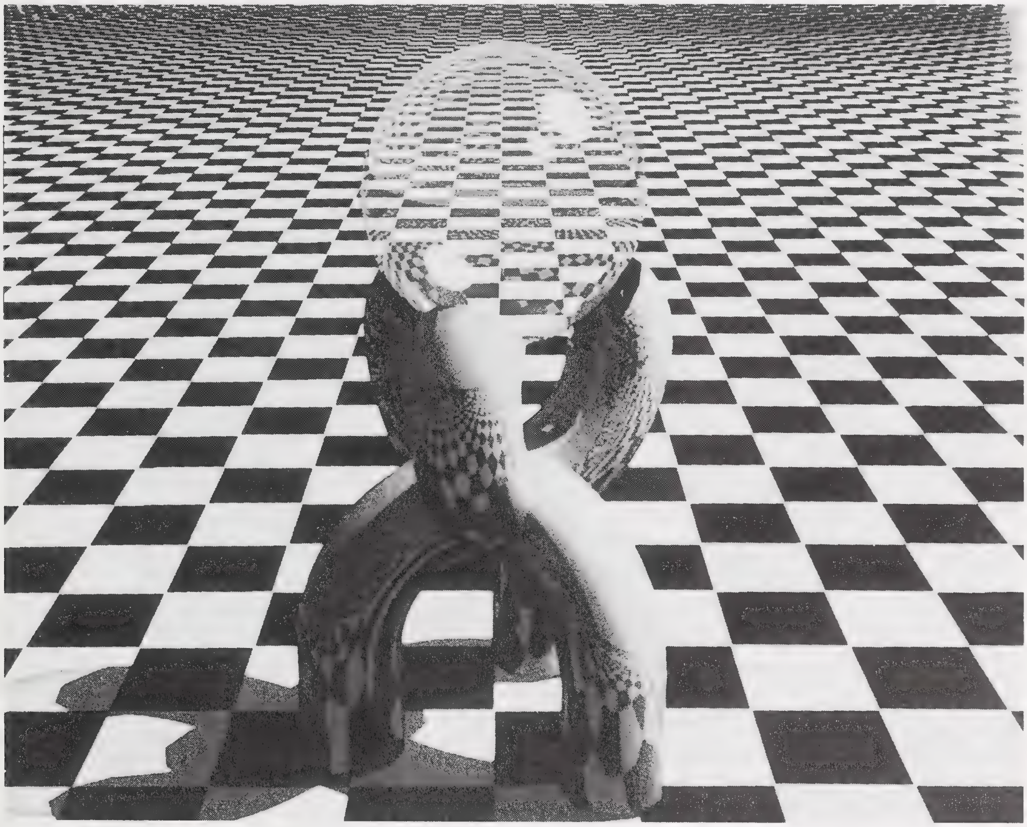
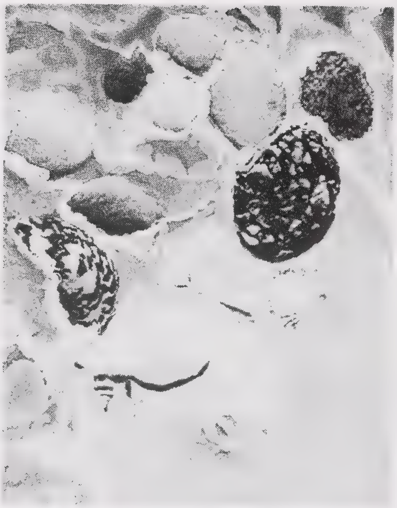


Illustration 198. Drafting Style. The ability to create sophisticated renderings is no longer confined to users of expensive computers. This image, for example, was created on the Amiga with software from Byte-by-Byte. Reprinted with Permission from *Computer Graphics World*, 7/89 Issue. Copyright PennWell Publishing Company 1989.

The drafting style is very geometric and structured (see Illustration 198). Scenes are created using the shape-making features of the software or curved line feature. Pure colours are used to fill in the areas once they are drawn.



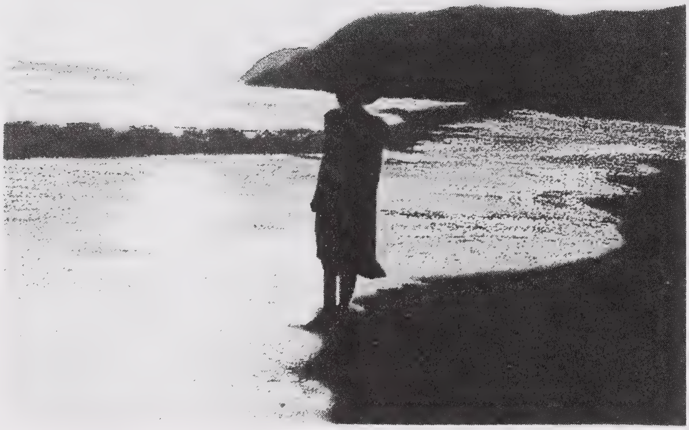


Illustration 199. Expressionist style. Artworks created by students of the School of Visual Arts in New York. Top – *Faux Beach* by Patricia Hoffman. Bottom – *Sunset* by Nam Hong T. Doon. From Graphics Portfolio of *Computer Graphics World*. Reprinted with Permission from *Computer Graphics World*, 2/89 Issue. Copyright Pennwell Publishing Company 1989.

Illustration 199 was done in using an expressionist style. This method is much more like expressionistic painting. Colours are selected from the colour palette, and are simply painted with a painting tool (or spray painted if the software has this feature) on screen. There is no preliminary drawing stage although a rough sketch on screen might assist the artist in knowing where to place the colours. There are no outlines surrounding each area of colour. Using this method, colours, and textures can be blended and merged in the painting.

The following images further illustrate how the computer can be used to create different styles.

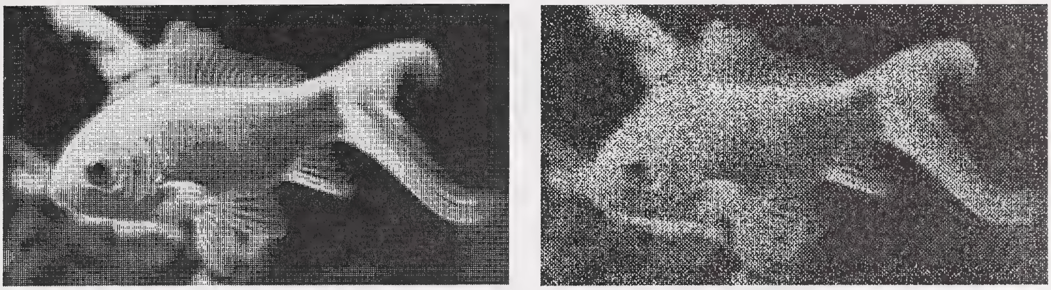


Illustration 199. a. Computer drawings by Dave Bell, Graphic Artist, LRDC.

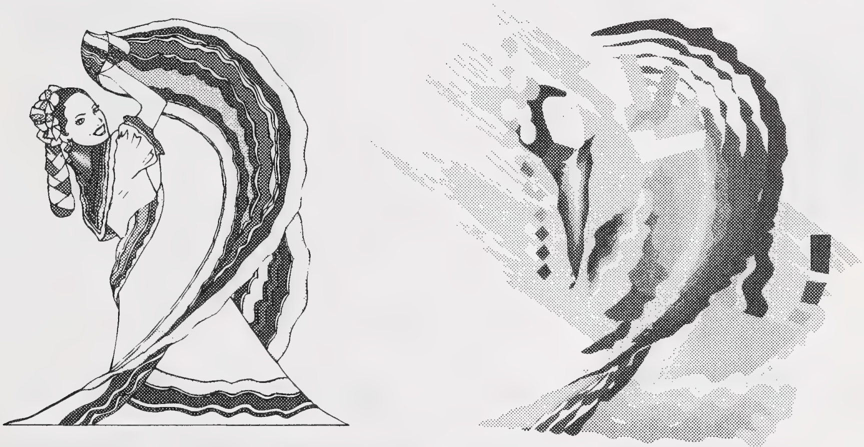


Illustration 199. b. Left, realistic computer drawing of a Spanish dancer. Right, abstract computer drawing of the same Spanish dancer. Computer drawings by Dave Bell, Graphic Artist, LRDC.

Which style do you think is most pleasing? Why?

Check your answers by turning to the Appendix, Section 3: Activity 3.

Activity 4: An Interview with a Graphic Artist

Discuss the advantages and disadvantages of making graphics with a computer.

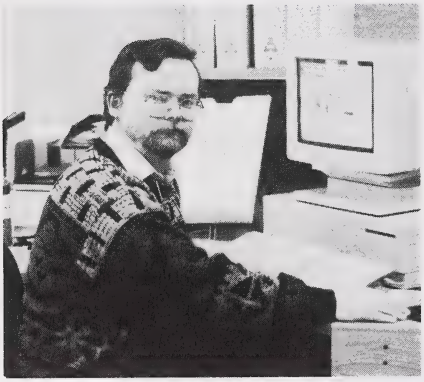


Illustration 199. c. Dave Bell, Graphic Artist, LRDC.

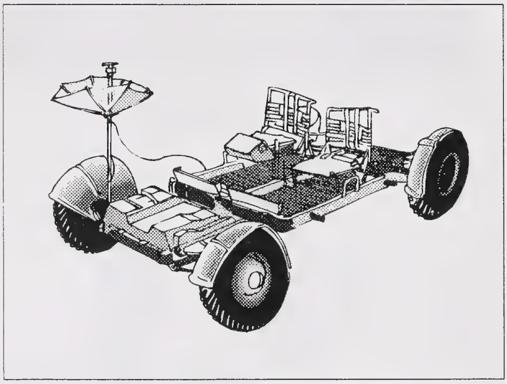


Illustration 199. d. Computer drawing by Dave Bell, Graphic Artist, LRDC.

Interviewer: How long have you worked as a graphic artist?

Graphic Artist: I have been an artist since 1977. I started building displays for Woodward's to make extra money for secondary school. While at the Alberta College of Art I took summer employment as a graphic artist for ITV. Following school, I became a commercial artist for a leading graphic design firm; then in 1983 I became a graphic artist/illustrator for the Alberta Government.

Interviewer: When did you begin using a computer in your work?

Graphic Artist: Computers were first introduced to me in 1981. This was a heavy box about 9" square; its sole purpose was to determine exposure times on a process camera. Then in 1987, small desktop computers became available for use, primarily for storage and retrieval of simple graphic images and typographic information. Today, computers have advanced to a point where most of the work is either completely or partially done on them.

Interviewer: What kinds of drawings are best done on a computer?

Graphic Artist: This is entirely dependent on the size of the computer and type of software. Generally speaking, computers having lower memory may be good for shapes and fills or charts. Computers with higher memory may be used to create realistic or otherwise much more complex imagery. Today there is virtually nothing that cannot be done on a computer that can be done by hand given the right software. Computers are ideal for engineering and drafting to ensure accuracy and a perfect tool for commercial art and advertising.

Interviewer: Do you ever combine traditional and computerized drawing?

Graphic Artist: All the time. A computer is a tool which is no different than any other you can create with; a carpenter will use a saw to cut wood, a hammer to nail with, and so-on to create a house. So too, an artist, may use the computer. Perhaps you want to print on a hand-coloured page or manipulate a hand drawing. Often I will use a rough sketch to determine proportions or tonal values and such. By scanning* a sketch you might trace it with your software to manipulate it, or colour it, or smooth it out; the possibilities are almost endless.

* Scanning is making a photo-like reproduction which will appear on your monitor.

Interviewer: Is it faster to design using a computer?

Graphic Artist: It can be, when a person is practised and confident with the computer. Tones and textures may be applied with the "click" of a button. Mistakes can be erased or undone instantly.

Interviewer: What are some advantages or disadvantages of computer design?

Graphic Artist: The major advantage of a digitized graphic is still storage and retrieval. You can "save" a graphic and then recall it at any time, print it with or without changes with little effort. Some are capable of over a million different colours and shades of grey. The advantages are endless, as each user will apply his or her needs differently. One disadvantage is that it's not easily portable in most cases and requires a power source so it's not likely you would take one on a drawing hike to the mountains, for example. Also, printing elsewhere is dependent upon someone else having the same software and computer.

Note: There are no questions for this activity.

Activity 5: Animation

Discuss some of the uses of computer animation.

Animation programs use different methods of moving objects on screen. Some programs animate frame by frame which compares to the traditional method of animation. In this method, each frame must be drawn. Other programs make use of techniques called **tweening** and **transformation**. Tweening (short for “in-betweening”) saves time and computer memory since you draw only the key frames of a sequence and the computer will fill in the in-between frames. Transformation allows you to draw a shape by a “filling in the dots” technique. Once you have drawn the original shape you can transform it by changing the location of the dots that make it up.

Computer animation has a variety of uses in today’s world. The following are just a few examples:

- Teaching: Computer animation programs can be used to clarify or enhance explanations by showing through action, process, steps, or cause and effect.
- Entertainment: Video games, animated cartoons and movies (e.g., the animated Disney classics) all make use of computer animation. Many of today’s popular science fiction films are the product of computer animation.
- Advertising: Television advertising in particular uses computer animation.
- Simulation: Computer animation is used in flight simulators, engineering design (e.g., designing new cars), weather pattern simulations, etc.

As technology continues to develop, computer animation will undoubtedly grow in use.

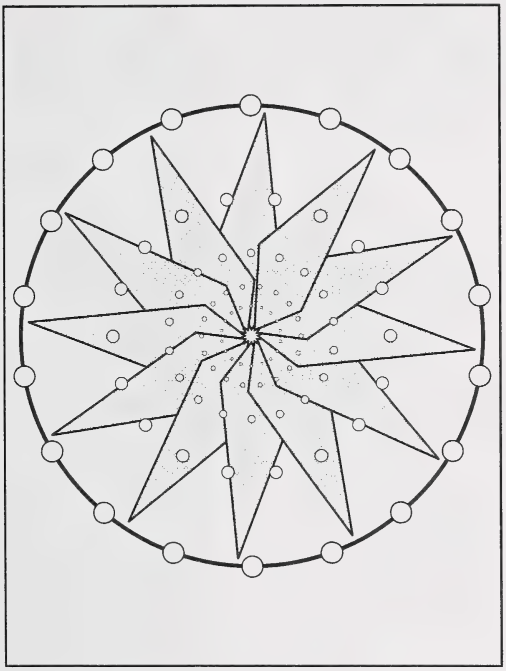
Why might computer animation be used in place of traditional animation?

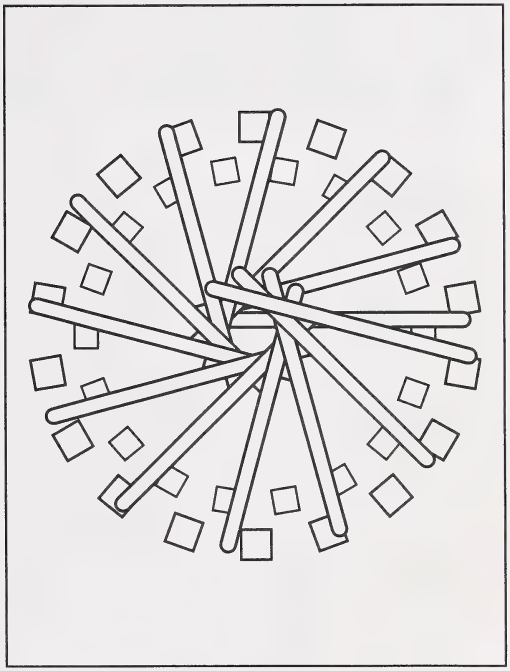
Check your answers by turning to the Appendix, Section 3: Activity 5.

Follow-up Activity: Kaleidoscope Designs

Most graphics programs have a mirror or kaleidoscope* feature that mirrors the line or shape you draw, so that multiple lines or shapes appear on the screen. When using this feature, you must be careful not to overwork the design you are creating. It is fairly easy to do as you can get carried away with the mirror feature.

Look at the following examples:





If you have access to the video laserdisc *The Dream Machine*, view Volume 1, The Visual Computer, and Volume 2, Computer Dreams.

Suggest "places" where this design feature might be used.

Check your answers by turning to the Appendix, Section 3: Follow-up Activity.

Conclusion

In this section you have learned something about the computer as an exciting and different image-making tool.

Assignment Booklet

Turn to your Assignment Booklet and do the assignment for this section.

Module Summary

Advances in technology and the knowledge an artist gains in the fields of science and technology can inspire artists to explore and implement new possibilities for image making.

SECTION 4

TECHNOLOGY: COMPUTER GRAPHICS AND ELECTRONIC MEDIA

The next time you see a television logo with spinning letters that look as though they had been cast in gold or silver, remember that you're probably watching an animation made with a computer; the next time you're in a video arcade keep in mind that someone trained as a computer graphic artist likely created the images you see on the video screen.

Computers, once regarded as useful only for calculating mathematical and scientific problems, have now become instruments that can be used for image creating. They are becoming easier to use, and you don't have to be a whiz at math or science to use them to make graphics. Today, both commercial and fine artists are discovering that the computer is a wonderful and versatile instrument for making images.

Upon completion of this section you will be able to

- create still imagery and animation using a computer with appropriate software
- examine some of the ways computers can be used for image creation
- combine computer graphic technology with forms of traditional media
- discuss the advantages and disadvantages of making graphics with a computer
- compare image creation with a computer to image creation with traditional media.

A decade ago most people thought that computers were only useful in the world of math and science. Just a few years ago word processing* developed when people decided that computers could be used for writing and printing text. Today many people are discovering that the computer can be used as an instrument to make graphic images. Computer technology has changed very rapidly in the last decade. Some images that are now created look very realistic with millions of colours and millions of "pixels" (short for "picture elements" which are the dots that make up the images on a computer screen). See Illustration 196.

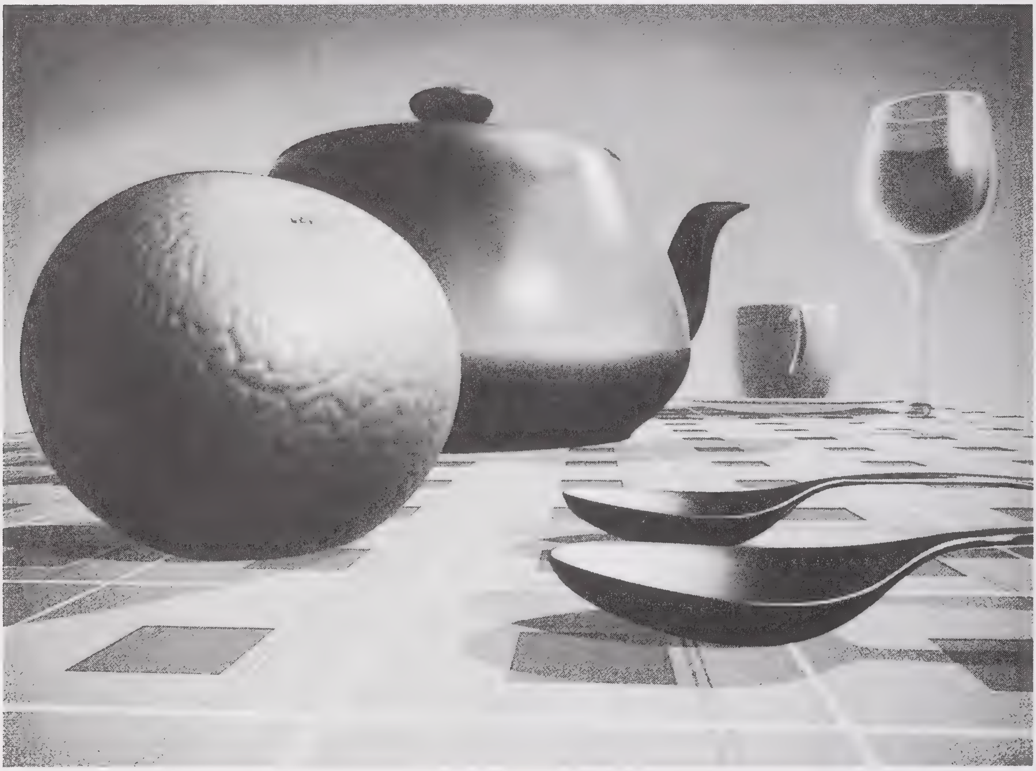


Illustration 196. *Table Top Scene Simulation.* Courtesy Information International, Inc.

Painting, drawing, and animation can be done with popular microcomputers* if you have the right software (program), an input device (a mouse or graphics tablet), and a colour monitor – if you want to depict colour. The concepts explored in this section look at the type of computer graphics that can be made with microcomputer systems.

Types of Computers and Alternate Software

You will need **two** types of software (programs) to complete the activities in this section: **a painting program** and an **animation program**. Colour capabilities are suggested but not required. Software will differ depending on the type of computer you are using. The following is a list of paint programs and animation programs available for popular computers.

(P) = Paint (A) = Animation

Apple IIe, IIc
(P) Dazzle Draw, Koala Paint, MousePaint, 816/Paint
(A) Animate, Fantavision, Movie Maker, Take One

Apple IIGS
(P) Delux Paint, 816/Paint
(A) Fantavision

Apple MacIntosh
(P) Adobe Illustrator, Cricket Draw, FullPaint, MacPaint, SuperPaint, MacDraw II
(A) MacVideo, VideoWorks

IBM XT and compatibles
(P) Dr. Halo, Koala Paint, PC Paint Magic, Coral Draw
(A) Professor Pixel

Commodore 64
(P) Color-Craft, Koala Paint, Paint Magic
(A) Movie Maker

Amiga
(P) Aegis Images, Delux Paint, Express Paint, Photon Paint
(A) Aegis Animator, Delux Video

Activity 1: Exploring Computer Design

Create still imagery using a computer with appropriate software. Compare image creation with a computer to image creation with traditional media.

Look at Picture 200, Harold Cohen, *Colored Drawing*, in your *Art 31 Booklet of Reproductions*.

Cohen's work, *Colored Drawing*, was created on a computer. Notice the shapes, lines, balance, and use of colour.

In order to use a computer to create design you need to start with a graphics program that includes a paint or drawing option. While graphics programs vary, they have similar features.

The graphics program that you use will contain a variety of drawing tools and shape-making features (circles, squares, etc.). This activity will allow you to feel comfortable using your software and input device (mouse or graphics tablet) to create a non-representational or abstract image.

Using your graphics program, explore all the possible shapes and drawing tools available. You can erase any area or mark you don't like using the erase feature. Look at the computer screen as though it were a canvas, and as you do, think about balance, rhythm, and texture. Try to create a non-representational picture that expresses an idea like speed, tension, or excitement. If you have a printer and can print your image, colour the printed copy with pencil crayons or marking pens to give it even more expression. After completion answer the following questions.

1. What are the differences between drawing on paper and drawing with a computer?

   ____

   ____

   ____

   ____

2. Which would you rather do and why?

   ____

   ____

   ____

   ____

Check your answers by turning to the Appendix, Section 4: Activity 1.

Activity 2: Creating Textures

Examine some of the ways computers can be used for image creation. Discuss the advantages and disadvantages of making graphics with a computer.

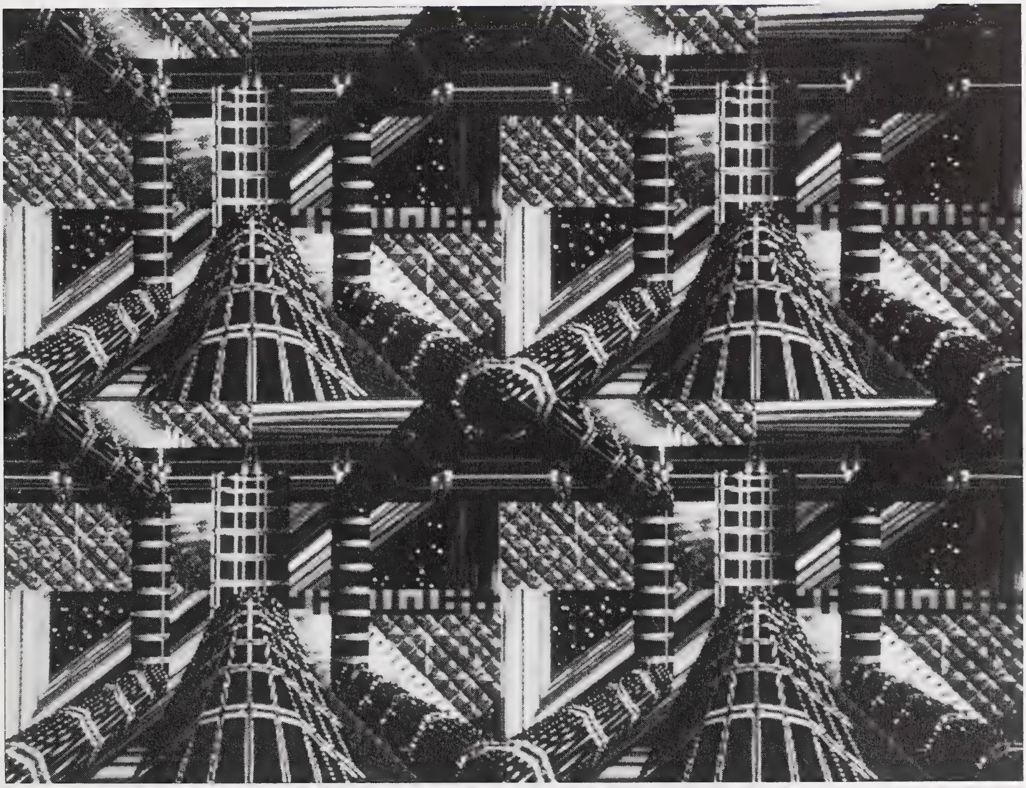


Illustration 197. David Em. *Escher*, 1979. Reproduced by permission of the artist. Courtesy of Spieckerman Associates, San Francisco.

Texture refers to how something feels. Textures can be rough, smooth, prickly, fuzzy, or velvety. The illusion of texture can be implied by a drawing or painting. (See Illustration 197). Your graphics program will have a texture tool that makes different fill patterns or designs. Explore this capability of your software by creating several examples of different textures on screen. You can also create your own textures by repeating lines and shapes, or even repeating text and numbers. Once you have created a variety of textures on screen, print them out on paper. You can use the printed versions to create a collage. Cut out interesting shapes or designs, compose them, and paste them on paper to create a new image. After completion answer the following questions.

1. List some advantages you feel you have when drawing with a computer.

2. What are some disadvantages?

Check your answers by turning to the Appendix, Section 4: Activity 2.

Activity 3: Computer Styles

Create still imagery using a computer with appropriate software. Examine some of the ways computers can be used for image creation.

Just as there are different styles and approaches to painting in acrylic or oils, there are different styles that can be used when using a graphics program with a computer.

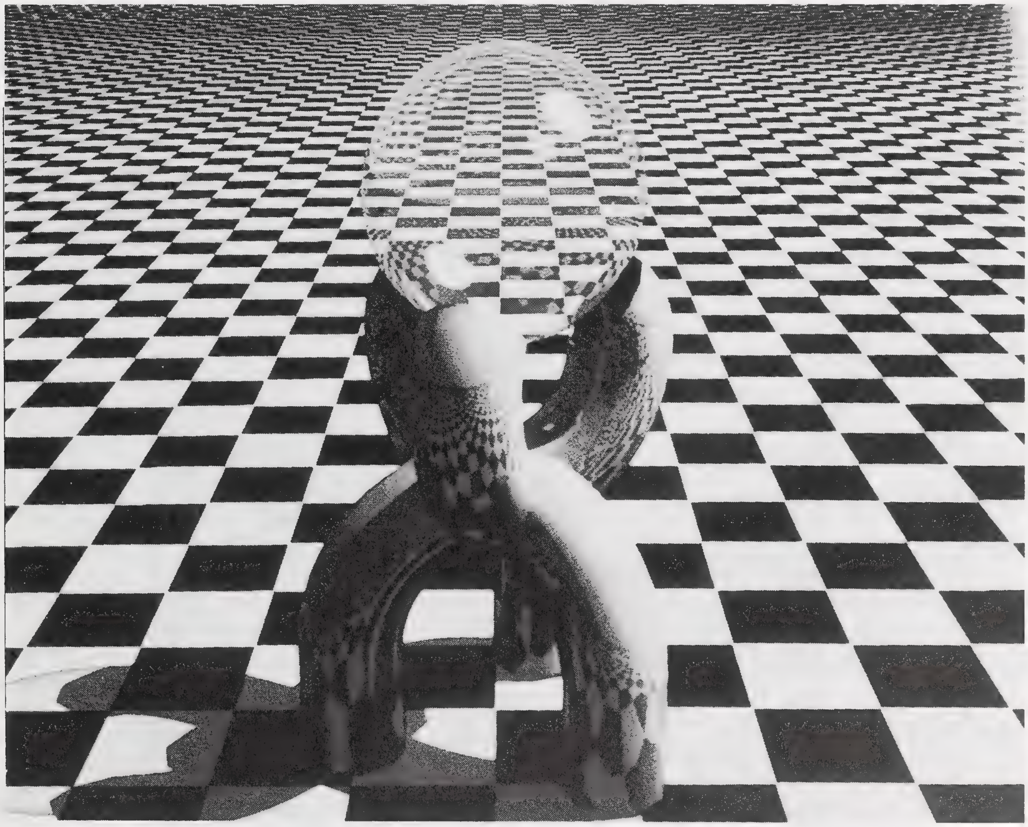


Illustration 198. Drafting Style. The ability to create sophisticated renderings is no longer confined to users of expensive computers. This image, for example, was created on the Amiga with software from Byte-by-Byte. Reprinted with permission from *Computer Graphics World*, 7/89 Issue. Copyright PennWell Publishing Company 1989.

The drafting style is very geometric and structured. Scenes are created using the shape-making features of the software or curved line feature. Pure colours are used to fill in the areas once they are drawn. A scene is drawn in outline form depicting areas of shade in outline as well, then colours are added afterwards by using the "fill" feature of the software. Once the drawing stage is completed, the colours and areas of shade are added in an almost "paint by number" fashion.

Illustration 199. Expressionist style. Artworks created by students of the School of Visual Arts in New York. Top – *Faux Beach* by Patricia Hoffman. Bottom – *Sunset* by Nam Hong T. Doon. From Graphics Portfolio of *Computer Graphics World*. Reprinted with permission from *Computer Graphics World*, 2/89 Issue. Copyright PennWell Publishing Company 1989.

Illustration 199 was done using a expressionist style. This method is much more like Expressionistic painting. Colours are selected from the colour palette, and are simply painted with a painting tool (or spray painted if the software has this feature) on screen. There is no preliminary drawing stage although a rough sketch on screen might assist the artist in knowing where to place the colours. There are no outlines surrounding each area of colour. Using this method, colours and textures can be blended and merged in the painting.

Set up a still life using cups, vases, flowers, books, or anything you feel comfortable drawing. First try depicting the scene in the drafting style, then after completing this screen, create a new screen and depict the scene again in the expressionistic style. After completion compare the two scenes and answer the following questions.

1. Which style did you feel most comfortable using and why?

2. Which style do you think is most pleasing to the viewer? Why?

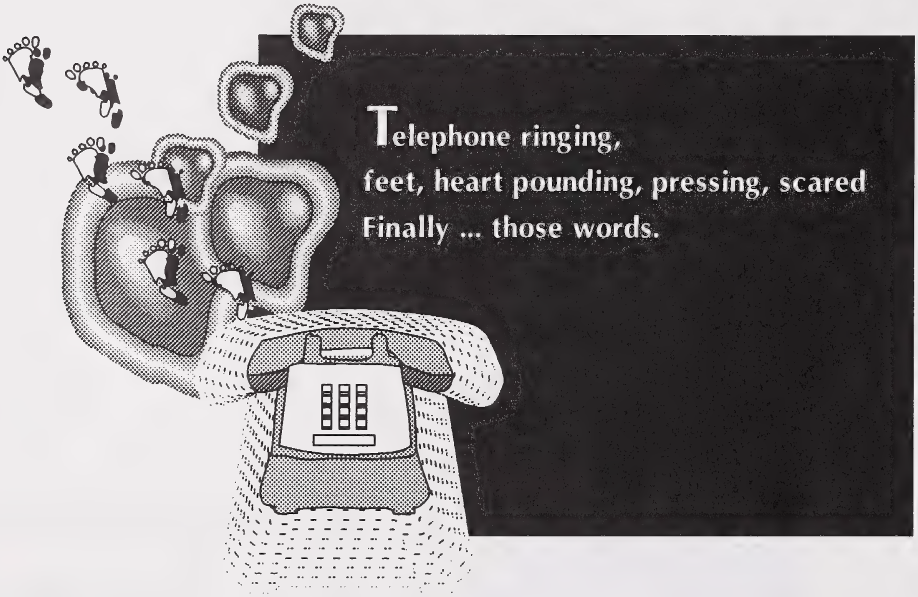
Check your answers by turning to the Appendix, Section 4: Activity 3.

Activity 4: Illustrating Text

Combine computer graphic technology with forms of traditional media.

Select or create a short poem or verse (you might think of using Haiku for this activity). Try illustrating the poem using your paint package. Include the text of the poem in your illustration. As you create, be aware of balance, harmony, rhythm, and formal design concerns.

The following example was done using an Adobe Illustrator program.



Check your answers by turning to the Appendix, Section 4: Activity 4.

Activity 5: Designing with Computer Graphics

Examine some of the ways computers can be used for image creation.

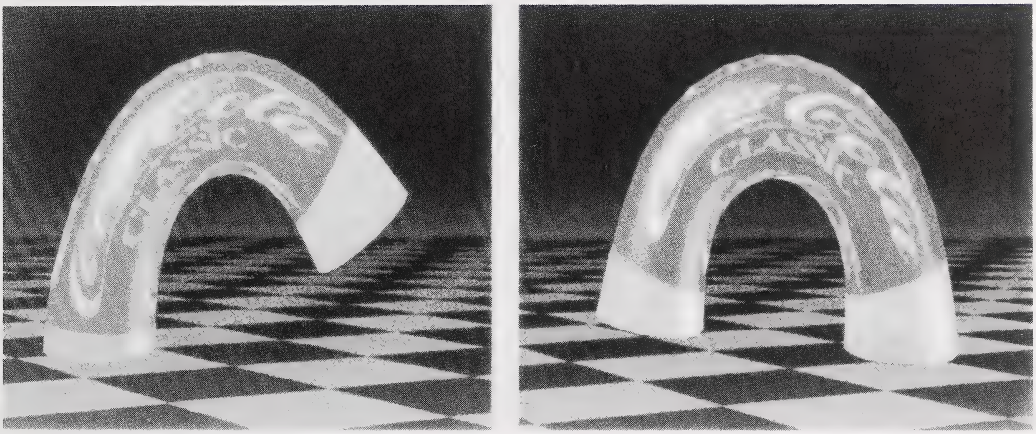


Illustration 200. The multi-targeted metamorphosis feature of Pansophics Studio Works package makes it possible to animate an object like a Coke can by changing its shape. Reprinted with permission from *Computer Graphics World*, 7/89 Issue. Copyright PennWell Publishing Company 1989.

Imagine that you are a commercial artist. A soap company has approached you for a new design for a box for its bar of soap. Divide your computer screen into four quarter sections. In the upper left section create the new design, and then copy it (using the cut and paste feature of your software) into the remaining three sections. Explore the various colour possibilities the product might have in the copies you have made. Think about complementary and analogous* colour combinations when you do this. If you do not have colour capabilities with your computer, use the texture and fill features of your software to represent different colours.

Check your answers by turning to the Appendix, Section 4: Activity 5.

Activity 6: Animation

Create animation using a computer with appropriate software.

Animation programs use different methods of moving objects on screen. Some programs animate frame by frame which is the traditional method of animation. In this method, each frame must be drawn. Other programs make use of techniques called **tweening** and **transformation**. Tweening (short for "in-betweening") saves time and computer memory since you draw only the key frames of a sequence and the computer will fill in the in-between frames. Transformation allows you to draw a shape by a "filling in the dots" technique. Once you have drawn the original shape you can transform it by changing the location of the dots that make it up.

Using your animation program, (whether it is a frame by frame, tweening, or transformation program) create a simple animated sequence with one character and a background. For a start try animating a stick-person waving a hand. Once you have completed this you can try something more complex – an animal running, a car moving, or a person dancing.

Check your answers by turning to the Appendix, Section 4: Activity 6.

Follow-Up Activities

If you had difficulty understanding the concepts in the activities of this section, it is recommended that you do the Extra Help. If you have a clear understanding of the concepts it is recommended that you do the Enrichment.

Extra Help: Kaleidoscope Designs

Do one or both of the following.

1. Most graphics programs have a mirror or kaleidoscopic* feature that mirrors the line or shape you draw, so that multiple lines or shapes appear on screen. If your program has a mirror or kaleidoscopic feature use it to create a mandala* shape. Make sure you do not overwork this design. It's fairly easy to do as you can get carried away with the mirror feature.

2. If you have access to the video laserdisc *The Dream Machine*, view Vol. 1, *The Visual Computer* and Vol. 2, *Computer Dreams.*

Check your answers by turning to the Appendix, Section 4: Extra Help.

Enrichment: Design Project

Use your computer paint package to design an album cover for a new rock group. Choice and style of design are up to you, but the album cover should contain the group's name.

Check your answers by turning to the Appendix, Section 4: Enrichment.

Conclusion

In this section you have learned something about the computer as an exciting and different image-making tool.

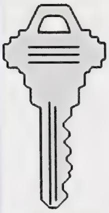
Module Summary

Advances in technology and the knowledge an artist gains in the fields of science and technology can inspire artists to explore and implement new possibilities for image making.

Assignment Booklet

Turn to your Assignment Booklet and do the assignment for this section.

Appendix



- Glossary
- Activities
- Extra Help
- Enrichment

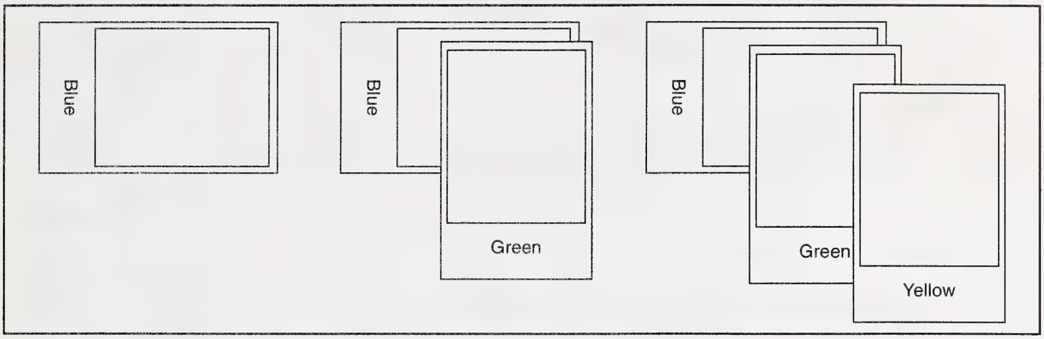
Glossary

Analogous colour	• colours that are closely related: red – orange – yellow
Analytical cubism	• one part of an art movement (1907-1914) Cubists analysed the forms of objects into geometric planes and recomposed the object from various points of view.
Chaotic	• wild disorder
Constructivism	• nonobjective art movement that originated in Russia
Cursor	• the mark on the display screen of a computer that indicates the current location for data entry
Cybernetics	• the study of automatic control systems of the brain and of mechanical control systems: computers, thermostats
Formal	• according to convention, custom, or rule
Hieratic	• priestly; related to ranking one above the other; used in Egyptian traditional styles of art
Ingenious	• resourceful, inventive
Kaleidoscopic	• rapidly changing; a kaleidoscope is an optical instrument in which tiny bits of coloured material are turned to form ever-changing designs
Kinetic	• of or due to motion Kinetic art is an art form that depends on movement for its effect.
Laser	• **l** (light) **a** (amplification) **s** (stimulated) **e** (emission of) **r** (radiation); a special kind of light beam
Mandala	• a graphic and often symbolic pattern usually in the form of a circle divided into 4 separate sections or bearing a multiple projection of an image
Microcomputer	• a small (desk top) computer popularly used in homes, schools, businesses, etc.
Modulator	• a device for changing from one form to another
Non-denominational	• not limited to any one point of view
Optic	• related to the eye or to sight
Painterly	• in the manner of a painting

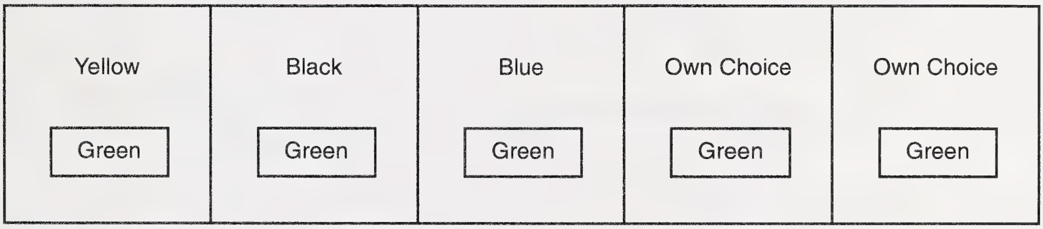
Rational	• reasonable, sensible
Ritual	• prescribed order of performing rites; procedure reguarly followed
Spatiodynamics	• the study of spatial relationships; an examination of the energy generated by spaces
Triptych	• a set of three artistic works
Word processing	• a computer program which enables a writer to edit text

Section 1: Activity 1

1.



2.

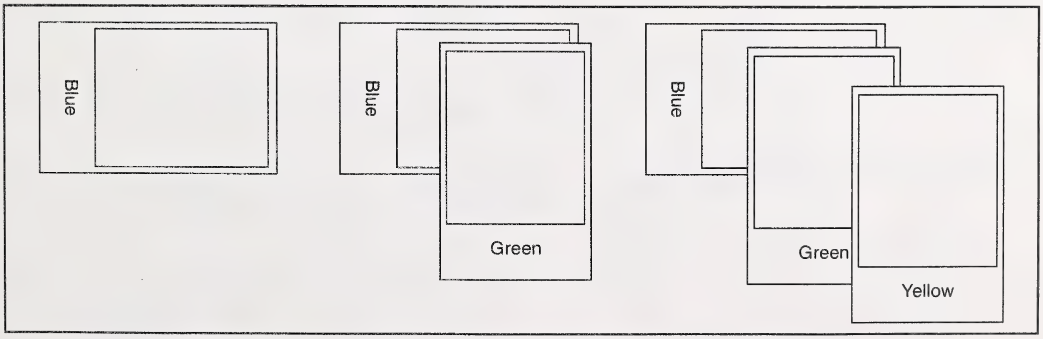


a. Answers will vary depending upon your responses.

b. The colours seem to move. Values appear to change. The green seems lighter on the black and blue square, darker on the yellow square.

c. Colour effects are relative, depending on neighbouring colours.

3. a.



   b. Arrangements and quality of blue, green, yellow will vary.

   c. Swatches of pure colours that are contrasted within a single rectangle create the illusion of movement. Some colours appear to advance, some to recede. Colours are affected by one another. Colour values are relative.

4. Experiments will vary.

5. Answers will vary depending on the colours chosen.

Section 1: Activity 2

1. Answers will vary. You might consider that the square is for Albers the best figure in which to express colour relationships. All the paintings are nests of squares of various colour combinations.

2. a. *Homage to the Square: Broad Call*
   Red and red-orange

   Homage to the Square: Ascending
   Yellow and blue

   Homage to the Square: Curious
   Red, purple, and green.

   b. *Homage to the Square: Broad Call*
   The small centre square is red.
   The mid-size square is red-orange.
   The outer large square is orange-red.

   Homage to the Square: Ascending
   The yellow square is the smallest.
   The light blue square is mid-size.
   The grey-blue square is about double the yellow square.
   The blue outer square is about 2 1/2 times larger than the red.

   Homage to the Square: Curious
   The purple square is 2/3 larger than red.
   The green square is 3/4 larger than purple.
   The grey-green outer square is 2 1/2 times larger than the red.

3. *Homage to the Square: Broad Call*
   The red square seems to advance, the orange to recede.

   Homage to the Square: Ascending
   The yellow square seems to advance, the outer blue square to recede.

   Homage to the Square: Curious
   The red square appears to advance, the purple to recede, the outer grey-green to advance, the inner green to advance and to recede.

4. *Homage to the Square: Broad Call* is a combination of analogous or related colours. When combined these colours appear to vibrate and move.

   Homage to the Square: Ascending is a combination of complementary colours: yellow and blues. These colours vibrate producing greenish effects. The squares and colours seem to advance and recede.

   Homage to the Square: Curious is a combination of related (red and purple) and complementary (red and green) colours. The colours vibrate and change, advance and recede.

5. Interpretations will vary.

   Homage to the Square: Broad Call
   Homage means praise. "Broad Call" might mean a selection of colour across a single wide range: reds to oranges.

   Homage to the Square: Ascending
   This title may refer to the effect of movement upward created by the combination of yellow and blue squares.

   Homage to the Square: Curious
   "Curious" may refer to the double effect of warm and cool, related and complementary which causes the squares to appear to advance and recede almost simultaneously.

Section 1: Activity 3

1. The common characteristics are

   - few elements: narrow and broad lines
   - simple shapes: rectangles
   - few colours
   - moment of balance

2. Newman's style is clear, simple, geometric. He uses fields of colour without images to express feelings of strength and balance.

3. Colour interactions are between

   - blue and yellow: *Concord*
   - blue and red: *Horizon Light*
   - red and purple: *The Way I*

4. Answers will vary. Since Newman wished only colour interaction to express the feeling of the work, any interpretation or association that you can make will do.

5. Answers will vary.

Section 1: Activity 4

1. Helen Frankenthaler's style is free and abstract. Frankenthaler's work might remind you of Jackson Pollock's dripped paint or Cézanne's broken edges.

2. Most of the titles refer to landscape. In *Brown Moons* each brown shape is related to a form, in *Canal* the yellow shapes flow through the blue, in *Blue Territory* there are suggestions of tree shapes and a horizon, in *Flood* the colours overflow one another, *Yellow Clearing* shows a horizontal yellow colour cutting across the canvas.

3. Like Josef Albers, *Homage to the Square – Ascending,* Helen Frankenthaler's *Flood* shows a colour relationship between blue and yellow. In both paintings colour interactions make the shapes vibrate and move. Albers' theory that colours are changed by their relationships with one another is shown also in Frankenthaler's *Flood*. (You may choose other examples.)

4. In Frankenthaler's work there are no harsh or dark colours, no images, no symbols: only free floating colours as in *Flood*, *Yellow-Clearing*, or *Blue Territory*. Unlike Rouault, Brancusi, Rogers, or O'Keeffe, Frankenthaler had no "message" or abstractions from real objects. The poured paint staining the canvas creates the free images. The works chosen from Module 4, Section 4 will vary.

5. a. If the painting shows no hard edges, no specific shapes or images, the colours will create an illusion of expanding as you noticed in *Flood.*

   b. Paint will appear luminous if it is light and transparent.

   c. Selections will vary. Here is an example:

      Flood

      The deep blue across the bottom rests on a narrow yellow band. The green and blue vibrate, receding and advancing. The orange and pale red create an illusion of upward movement. Sometimes the light space seems to be behind the green, sometimes it seems to come forward.

Section 1: Activity 5

1. Mark Rothko has eliminated all shapes and textures, details and images. Only areas of colour are left.

2. This technique would create colour vibrations that might communicate a feeling of peace.

3. These titles suggest that Mark Rothko thought of his paintings as association-free, that is they referred to no objects or special feelings.

4. Rothko's paintings, because they have no images or textures, because they have only colour, might communicate a feeling of calmness. Answers to the second part of the question will vary.

5. The similarities between Rothko's paintings and Albers *Homage to the Square* series are

    - both used colour only as the subject
    - neither used images, textures, details
    - both used flat areas of colour

    The differences include

    - Rothko used large areas of colour that go from edge to edge.
    - Albers used nesting squares of colour to create effects.

    Rothko's works seem more peaceful. Albers' works feel like puzzles or exercises.

6. Answers will vary. You should note that coloured panels do not distract you with images or details.

7. A possible statement might be

    Order and peace can come from meditation or from quiet looking.
    Rothko's *Tan and Black on Red* makes no demands. The artist wants us only to look.

8. Answers will vary. You should have some of the following points in your statement:

    - colour has the power to influence feelings
    - colour can create illusions of space and movement
    - colour can suggest light
    - colour can create feelings of peace and calmness
    - colour has the power to create atmosphere

Section 1: Activity 6

1. The result would be a constantly changing pattern of different shapes and values.

2. a. Such experiments show us new and different ways of making images and experimenting with colour relationships. These experiments introduced the idea of moving and changing images.

    b. Perhaps the *Light Organ* never caught on because it would take up so much room; it would require a lot of space and a darkened room.

3. The colours produced are vivid blue-purples, glowing yellow-greens, and deeply saturated reds that glow like light.

4. The colour limitations would be that only the light colours as programmed could be mixed.

5. The viewer would have to be in a darkened room in order to enjoy the work. The viewer would need a special place and costly equipment.

6. Both artists use colour as the only means of making the image. Helen Frankenthaler's *Flood* and Wilfred's *Lumia* use flowing colours to create works. Colour Field artists and Light artists believe that colour and light can stand alone in works of art.

7. Artists might be interested in working with neon lights because they can be shaped, can be made to reflect many different colours, and can be used to create line patterns and designs. The advantage might be that neon light sculptures can create patterns of changing light that will give artists a different way to make art.

8. a. Answers will vary depending on the objects you have chosen.

   b. Answers will vary depending on the objects you have chosen.

   c. Answers will vary.

   d. Answers will vary.

Section 1: Follow-Up Activities

Extra Help

The following are possible answers:

IDEA/INFORMATION	WORK
1. Colours seem to move.	Albers: *Homage to the Square: Ascending*
2. Changing the size of a colour can affect hue, value, intensity.	Albers: *Homage to the Square: Curious*
3. Colours are relative.	Albers: *Homage to the Square: Broad Call*
4. Colour can be the subject of a painting.	Newman, *The Way I*
5. Colour can create an illusion of space.	Frankenthaler, *The Flood*
6. Colour can create an atmosphere.	Frankenthaler, *Canal*
7. Colour can be used to paint with light.	Wilfred: *Lumia*
8. Colour can provide a spiritual experience.	Rothko Chapel
9. Colour interactions can stimulate an emotional response.	Rothko Chapel
10. Colour can create a feeling of expansion.	Frankenthaler, *Flood*

Enrichment

Answers will vary. Use some of the points made in the preceding Extra Help.

Section 2: Activity 1

1. Reactions will vary. You should notice the sensation of movement that these works create.
2. The illusion of movement is created by the curved lines soaring upward, by the patterns of small coloured shapes, by the dark vertical and diagonal lines.
3. The night scenes would allow the artist to create dramatic effects of dark and light, to make patterns of coloured lights, to create sharp contrasts, to use silhouetted or flat black lines.
4. Answers will vary.
5. The *Winged Victory* refers to an ancient Greek sculpture whose flowing garments and forward diagonal thrust suggests motion.
6. *Futurist* suggests someone who is looking ahead.
7. The artworks can be called rational-formal because they present ideas and technology rather than objective images or symbols of the past. Examples will vary.
8. Answers will vary. You might suggest the *Poiseidon* from ancient Greece; Turner's, *Rain, Steam and Speed* from the nineteenth century; Michelangelo's *Creation* from the Sistine chapel.
9. Answers will vary depending on the selection.

Section 2: Activity 2

1. Answers will vary depending on your reaction to *Twittering Machine.*
2. Answers will vary depending on your personal reaction. Be sure to support your view.
3. Artists have imposed the limitations of size, source of power, and range of movement.
4. The chief consideration of sculptures that move is design and motion; functional objects are designed to move for a specific purpose, they are meant to accomplish work. Sculptures that move are designed for our enjoyment and reflection.

Section 2: Activity 3

1. Both sculptures are of transparent plastic which allows the viewer to experience all parts simultaneously.
2. The experience of viewing these works would be different because in the transparent sculptures the surrounding space seems to flow into the work.

Section 2: Activity 4

1. The neon works created by the Light artists use abstract shapes. They have no "messages," the neon sculptures are designed for our enjoyment and contemplation, they don't "sell" anything.

2. Answers will vary. You should note the necessity of electrical preparation and safety precautions.

3. Answers may be museums, art galleries, universities, corporations, cities, etc.

Section 2: Activity 5

Answers will vary.

Section 2: Follow-Up Activities

Extra Help

1. Rationalist-formalist works differ from abstract-expressionist works in the following ways:

    - not designed to express emotion
    - often are about art itself
    - use materials and technology of the twentieth century
    - communicate ideas about colour
    - express new uses of materials
    - use non-objective images
    - are carefully planned
    - do not depend on intuitive responses
    - explore light as a medium for art
    - frequently rely on optical illusions for effects

2. Drawings will vary.

Enrichment

Mobile designs will vary.

Section 3: Activity 1

1. Drawing on paper is slower, is controlled entirely by the hand, and is less flexible. Drawing with a computer is flexible, experimental; it produces a different quality of image.

2. Answers will be personal.

Section 3: Activity 2

1. Answers will vary; you will probably decide that it depends upon your purpose as to which method is more effective.

2. a. Some advantages for an artist in experimenting with a colour computer program might include the following:

   - Experiments with different colours can be done instantly.
   - There is no waiting for paint to dry.
   - Colour tests do not need to be done.

   b. Drawbacks might be that while the computer design might be close to the intended result, it cannot replicate the colours, texture, etc., exactly.

Section 3: Activity 3

Answers will be dependent on personal preference.

Section 3: Activity 4

There are no questions for this activity.

Section 3: Activity 5

Certain things can only be done with computer animation. (Think of some of the special effects used in science fiction movies). Computer animation is faster than traditional animation.

Section 3: Follow-Up Activity

Answers will vary.

Section 4: Activity 1

1. Drawing on paper is slower, is controlled entirely by the hand, and is less flexible.
   Drawing with a computer is flexible, experimental; it produces a different quality of image.

2. Answers will be personal.

Section 4: Activity 2

1. Some advantages when drawing with a computer are

   - flexibility
   - variety
   - room for experimentation
   - easy to make changes

   You will think of others.

2. Some disadvantages might be

   - difficult to make a personal style of drawing
   - takes time to learn to control the machine
   - not so direct an experience as drawing by hand

Section 4: Activity 3

1. Answers will vary.

2. Answers will vary depending on your opinion.

Section 4: Activity 4

Designs will vary. Your illustration should convey the tone of the poem.

Section 4: Activity 5

Check your design by running a hard copy for your Visual Journal.

Section 4: Activity 6

Check your program by running it on the computer screen.

Section 4: Follow-Up Activities

Extra Help

Your program will be unique.

Enrichment

Your design will be an original.

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